



Digitized by the Internet Archive
in 2017 with funding from
University of Alberta Libraries

<https://archive.org/details/lyster1978>

THE UNIVERSITY OF ALBERTA

THE IMPACT OF THE CANADIAN WHEAT BOARD ON
THE WESTERN CANADIAN FEED GRAIN MARKET

by

LES M. LYSTER

AGRICULTURAL ECONOMICS

900

A PAPER

SUBMITTED TO THE DEPARTMENT OF RURAL ECONOMY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF AGRICULTURE

DEPARTMENT OF RURAL ECONOMY

EDMONTON, ALBERTA

FALL, 1978

ABSTRACT

Feed grain production and marketing are of primary importance to Western Canada. A high level of performance in the feed grain market is essential if Western Canada is to continue to develop its meat-grain industry.

Over the years, Canada has developed a number of unique institutions. The institution having the greatest bearing on the feed grain market is the Canadian Wheat Board. Thus, this paper focuses on the impact of the Canadian Wheat Board on the performance of the feed grain market in Western Canada. The major area of emphasis is the identification and analysis of the impacts of the CWB which are incident upon other market participants.

Performance variables used in the paper include: pricing efficiency, operational efficiency, stability, equity, and progressiveness. Using these criteria, the major areas examined include: the impact of CWB quotas, the impact of the CWB on feed grain pricing, and the impact of the CWB on the availability of market information.

Based on the areas identified, research recommendations have been formulated. It is suggested that the areas of research identified, if conducted, would provide a basis for future feed grain marketing and policy recommendations.

ACKNOWLEDGEMENTS

Throughout the course of graduate work, I have become indebted to many people for their help, consideration, and inspiration. In particular, I would like to express my appreciation to my supervisor, Dr. Murray Hawkins, for his help and guidance throughout my studies.

To the other members of my committee, Dr. M.L. Lerohl, and Dr. M.A. Price, appreciation is extended for your guidance and interest in my work. Appreciation is also extended to other staff and fellow graduate students of the Department of Rural Economy for your assistance, advice, and fellowship.

I would also like to acknowledge Alberta Agriculture for granting me a leave of absence to complete my graduate work. In addition, many Alberta Agriculture staff have provided helpful information and advice. A thank you goes to D. Braun for typing this manuscript.

I wish to express appreciation to my parents for their encouragement and interest in my career over the years. To Doris, a very special thanks for your help, patience, and understanding; without this my return to university would have been impossible.

TABLE OF CONTENTS

	Page
ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii

CHAPTER

1. INTRODUCTION	1
2. THEORETICAL BACKGROUND	3
Market Structure, Conduct, Performance	4
The Model	5
Performance Revisited	7
3. A BRIEF HISTORY OF THE CANADIAN WHEAT BOARD'S ROLE IN FEED GRAIN MARKETING IN CANADA	13
The Early Period 1917-1940	13
The World War II and Post War Period	14
The Interim Feed Grain Policy	16
The National Feed Grain Policy	17
1976 Amendments	18
4. THE STRUCTURE OF THE CANADIAN FEED GRAIN MARKET . . .	20
Feed Grain Marketing Patterns	21
Production of Feed Grains	26
Utilization of Feed Grains	32

CHAPTER	Page
5. THE IMPACT OF CANADIAN WHEAT BOARD OPERATIONS ON FEED GRAIN PRODUCTION AND MARKETING	36
The Impact of CWB Quotas	36
The Impact of the CWB on Feed Grain Pricing	43
Market Information Needs in the Feed Grain Market and the Impact of the CWB	55
6. SUMMARY AND RECOMMENDATIONS	58

BIBLIOGRAPHY	66
APPENDIX 1	71
APPENDIX 2	75
APPENDIX 3	79

LIST OF TABLES

Table		Page
1.	Producer Marketings Through the Licenced Elevator System, 10 year average, 1967-76, Wheat, Oats, and Barley	24
2.	Producer Marketings Through Licenced Elevators as a Percentage of Production, 10 year average, 1967-76, Wheat, Oats, and Barley	25
3.	Production of Wheat, Oats, and Barley, Prairie Provinces and Canada, 10 year average, 1967-76	27
4.	Percentage of Prairie Production of Wheat, Oats and Barley by Province, 10 year average, 1967-76	27
5.	Domestic Feed Grain Formula Price Relationships	48

LIST OF FIGURES

Figure	Page
1. Industrial Organization Model #1	6
2. Industrial Organization Model #2	7
3. Marketing Channels for Prairie Feed Grain	24
4. Wheat Production, Prairie Provinces and Canada, 1967-1976	28
5. Oat Production, Prairie Provinces and Canada, 1967-1976	29
6. Barley Production, Prairie Provinces and Canada, 1967-1976	30
7. Exports of Canadian Wheat, Oats, and Barley, 1957-1976	34

CHAPTER 1

INTRODUCTION

Feed grain production in Western Canada forms an important base for the Western livestock industry. Feed grain generally accounts for 55 to 70% of livestock production costs. However, this will vary depending on the type of livestock fed and relative feed grain prices.

For a viable Western Canadian livestock industry to continue to develop, it must remain competitive with Eastern Canada and the United States. If Western Canada is to maintain and expand the production of livestock, we should have a feed grain marketing system which performs efficiently. The system should also provide some degree of equity, stability, and progressiveness.

Feed grain production and marketing policy has been debated in Canada for many years. Considerable changes in feed grain marketing procedures have taken place over the years. Circumstances prevailing in the livestock and feed grain industries, coupled with rapid feed grain policy changes, have served to fuel the current feed grain debate. While it is recognized that there are several facets to the debate, an important element is the institutional dimensions at work in the feed grain market.

The Canadian Wheat Board (CWB) is an institution which has both a direct and indirect impact upon the Western Canadian feed grain market. Thus the purpose of this paper is to examine the impact of the CWB on the Western feed grain market. The paper will examine the CWB's role and impact using theory based on the industrial organization approach. Chapter 2, 3, and 4 will cover a review of the relevant theory, a brief

history of CWB involvement in feed grain marketing, and structural elements of the market. Chapter 5 will examine major areas of CWB impact. Finally, Chapter 6 will include recommendations for research and policy.

CHAPTER 2

THEORETICAL BACKGROUND

Economic theory provides the framework within which an economist investigates and analyzes contemporary marketing problems. There are three main aspects of economists' dependence on economic theory:

- (1) Theory provides a general orientation for investigation; i.e. it helps to provide criteria to determine what problems should be investigated.
- (2) Economic theory is the source of numerous hypotheses or predictions concerning the determinants of the economic behavior in which we are interested; i.e. a priori deductive reasoning.
- (3) Economic theory is an economist's source of standards of what constitutes a satisfactory or workable market performance for a business, an industry or the economy. Theory provides the norms or standards by which we make comparisons of existing performance relative to some desirable and attainable level of performance.

(7, p.18)

To formalize the theoretical analysis, economists have developed a number of theoretical constructs, commonly referred to as models. One such model is the industrial organization model. The industrial organization model has three major components: market structure, market conduct and market performance. Prior to discussing the model further, it is useful to define and outline the elements contained in each of the major components of the model.

MARKET STRUCTURE

Bain suggests that:

Market structure refers to the organizational characteristics of a market, and for practical purposes to those characteristics which determine the relations of sellers in the market to each other, of buyers in the market to each other, of the sellers to the buyers and of sellers established in the market to other actual or potential suppliers of goods including potential new firms which might enter the market. In other words, market structure for practical purposes means those characteristics of the organization of a market which seem to influence strategically the nature of competition and pricing within the market. (7, p. 7)

The main elements of market structure include:

- (1) The degree of seller concentration.
- (2) The degree of buyer concentration.
- (3) The extent of product differentiation.
- (4) Barriers to entry of new firms.
- (5) Growth rate of market demand.
- (6) Price elasticity of market demand.
- (7) Ratio of fixed to variable costs in the short run. (7, p.7; 23, p.16; 24, p. 516)

MARKET CONDUCT

Conduct "refers to the patterns of behavior that enterprises follow in adapting or adjusting to the markets in which they sell (or buy)."

(7, p.9) Conduct is the link between an industry's structure and its performance. (23, p. 37)

The major elements of conduct include:

- (1) Methods employed by the firm or group of firms in determining price and output.
- (2) The product policy of the firm or group.
- (3) Sales promotion policy.

- (4) Means of coordination and cross-adaptation of price, product and sales promotion policies among competing firms.
- (5) Presence or absence of, and extent of, predatory or exclusionary tactics directed against either established rivals or potential entrants. (7, p. 9; 24, p. 517; 23, p. 28)

MARKET PERFORMANCE

Market performance refers to the economic results that flow from the industry as an aggregate of firms. (24, p. 517) Society is concerned with how an industry performs in terms of such things as efficiency, progressiveness, stability and equity.

The elements of market performance are as follows:

- (1) Price relative to production costs.
- (2) Efficiency relative to size, scale and capacity.
- (3) Sales promotion expenditures as a percentage of production costs.
- (4) Design, quality and variety of products offered.
- (5) Relative progressiveness of the firm in product and technological development. (7, p. 11; 24, p. 517)

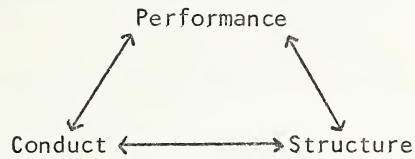
THE MODEL

In the study of industrial organization "a principal hypothesis is that market performance may be systematically determined by market structure and market conduct." (7, p. 41) Thus the model attempts to explain market performance through the analysis of the market structure and conduct variables. Within the model "the direction of causation is assumed to run from structure through conduct to performance." (24, p.516)

It has been suggested that:

In reality causation does not run one way. Indeed, each part is affected by each other part. Thus the model is more complex and should look like this:

FIGURE 1
INDUSTRIAL ORGANIZATION MODEL #1



(39, p. 17)

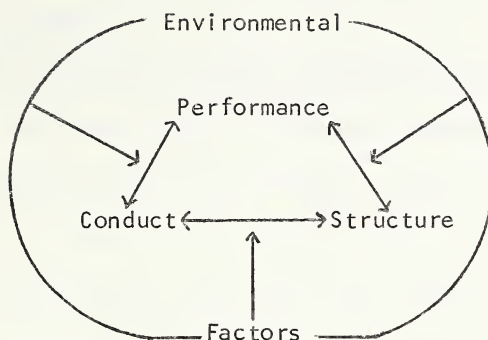
The relationships or linkages do not exist completely void of other forces. The setting or environment within which economic behavior exists influences the market structure, conduct and performance relationships. "Market structure and conduct represent only a small fraction of the total determinants of market performance." (7, p. 41) These 'other factors' determining market performance are collectively called environmental factors. Environmental factors¹ change and evolve over time. Thus, Bain suggests that "we can accept and assume these environmental factors to be more or less given." (7, p. 43) within a particular setting; i.e. time and place. Clodius and Mueller further emphasize the need to apply the structure, conduct, performance model only within a given setting:

Generalizing is hazardous at best, but particularly is this true when the research deals with the conduct of a particular firm or group of firms in an industry. The findings of such "case" or "industry" studies are those of that time and place tag. (24, p. 522)

1. Environmental factors may include such things as physical, business, technological, economic, social, cultural, political, and legal environments.

Thus the model can be more precisely illustrated as follows:

FIGURE 2
INDUSTRIAL ORGANIZATION MODEL #2



PERFORMANCE REVISITED

From the previous discussion, it has been established that the industrial organization model may be applied within a particular time and place setting. Hence the model will have unique features in any particular setting. Such is the case when attempting to apply the model to the Canadian feed grain industry.

The Canadian feed grain industry is characterized by a number of unique institutions, the most prominent being the Canadian Wheat Board.¹ Given the differing aspects of the Canadian feed grain industry, performance can now be discussed within a somewhat more specific framework.

Performance objectives, when applying the industrial organization model to the Canadian feed grain industry, have been selected as follows:

- (1) Efficiency (i) operational
- (ii) pricing

1. Other institutions include: The Canadian Grain Commission, The Canadian Livestock Feed Board, and The Winnipeg Commodity Exchange.

- (2) Stability
- (3) Equity
- (4) Progressiveness

Operational Efficiency

Operational efficiency refers to the physical or operational aspects of marketing. "An operationally efficient marketing system is one in which the output of useful marketing services is large relative to inputs of labour, capital and other resources utilized in marketing." (52, p. 121) Thus to attain operational efficiency, the firm is interested in making any adjustments it can to reduce per unit costs¹. In the case of the Canadian feed grain industry, the above discussion can be expanded to include institutions as well as firms. In the case of an institution (e.g. CWB) the operational efficiency objective could be expanded not only to include output of marketing services vs. inputs of resources internal to the institution, but to include recognition of output vs. input impacts incident upon firms in the industry due to the existence and/or actions of the institution.

Pricing Efficiency

Pricing efficiency is concerned with improving the operation of the buying, selling and pricing aspects of the marketing process so that it will remain responsive to consumer direction. (34, p. 11) Thus pricing efficiency is essentially concerned with the efficiency of the price discovery mechanism. Concerns include:

1. The firm's goal is assumed to be profit maximization. Thus the firm maximizes operational efficiency subject to the profit maximization constraint.

- (1) the accuracy, rapidity and effectiveness with which marketing information is developed and disseminated.
- (2) costs associated with providing the level of accuracy, speed and effectiveness attained. (52, p.122)

In the context of the Canadian feed grain industry, price efficiency in the feed grain market requires that prices accurately reflect temporal, spatial and quality differences. The reflection of 'accurate' prices may be viewed within the Canadian feed grain marketing context on the basis of how well price performs the following functions:

- (1) allocation of resources used in production and marketing of feed grains
 - (2) allocating and rationing of feed grain supplies among users
 - (3) balancing or equating the forces of demand and supply
 - (4) producing and allocating income payments among the various recipients.
- (52, p. 123)

Within the context of the Canadian feed grain marketing system, the rôle of the CWB in price discovery and the impact of the CWB on price discovery are of paramount importance. In short, the impact of the CWB on the ability of price to perform the above-mentioned functions is essential to the analysis of pricing efficiency of feed grains in Canada.

Stability

The application of the industrial organization model in the past has mainly been in such areas as manufacturing, processing, and retailing. Hence the performance goal of stability has not been given a great deal of attention. However, this is not the case in agriculture. Producer organizations, agri-business, governments, and academics have expressed

a great deal of interest and concern with respect to the problem of stabilization in agriculture. This is particularly true at the primary level of the agricultural industry.

The problem of instability in agriculture in Western Canada has been one of the forces which has led to the development of some of the institutions in existence today (e.g. the CWB). Thus when analyzing the performance of the CWB in the area of feed grain marketing, stability is an appropriate performance goal and stabilizing or destabilizing forces arising from CWB operations should be examined.

Equity

In addition to stability, equity was a major consideration in the development of the CWB. Equity considerations have also had a major impact on CWB operating procedures over the years (e.g. quota procedures).

Economists have difficulty dealing with the concept of equity, or distribution. For example, in the context of this paper, the distribution of marketing opportunity (CWB quotas) is of concern to Prairie producers. However, economists have a limited theoretical framework with which to evaluate the basis of distribution, or arrive at an optimum level of distribution. Possible procedures for evaluating distribution include:

- (1) Accept the status quo.
- (2) Only recommend policies which make no one worse off.
- (3) Accept equality of income, wealth, cash flow, or marketing opportunity depending on the issue being examined.
- (4) Accept the arbitrary judgement of some authority; for example government.

Attempts to perform this task place an economist in the area of

normative value judgements. However, economists, when evaluating market performance from an equity or distribution point of view, can note and describe the particular impact of market structure and conduct upon distribution of income, wealth, cash flow or marketing opportunity.

Progressiveness

Progressiveness is the fourth criterion to be considered in evaluating market performance. In the case of feed grain marketing, progressiveness can be considered on the basis of innovation and adoption of new technology in the production and marketing of feed grains. In the case of an institution, such as the CWB, one can evaluate internal innovation and adoption of technology. In addition, the impact of the CWB upon innovation and adoption of technology in the other segments of the feed grain industry should be examined. For example, an evaluation of the impact of the CWB on the adoption of technology could include the following areas:

- adoption of farm level technology such as feed wheat varieties or new inputs to achieve higher yields.
- the level of technology in the storage, handling, and transportation of Western grains; e.g. technology employed and investment levels in country elevators.
- the adoption of modern feed grain marketing techniques such as forward contracts.

Measurement of progressiveness in the feed grain market is difficult. However, indicators of the impact of the CWB on progressiveness, such as the above, can be identified and described. Also, comparisons may be made with the feed grain industry in the United States.

Finally, in evaluating overall market performance, an economist should be cognizant of the trade-offs between the various performance goals specified in the model. Trade-offs may be encountered between operational and pricing efficiency; between market efficiency and equity or stability; and between stability or equity and progressiveness.

CHAPTER 3

A BRIEF HISTORY OF THE CANADIAN WHEAT BOARD'S ROLE IN FEED GRAIN MARKETING IN CANADA

THE EARLY PERIOD - 1917 - 1940¹

Prior to the establishment of the Canadian Wheat Board as we know it today,² various temporary central selling procedures were applied. As a result of circumstances surrounding World War I, open market trading was suspended in 1917 and the Board of Grain Supervisors was established to market Canadian wheat. At the end of the war, a Wheat Board was established to market the 1919/20 crop. This Board was disbanded in 1920 and futures trading resumed.

Producers associated high wartime grain prices with central selling and were disenchanted when the Government of the time disbanded the Wheat Board. This dissatisfaction led to the formation of co-operative price pools. The three Prairie Wheat Pools were formed in 1923/24. They formed a central selling agency known as the Canadian Co-operative Wheat Producers Ltd. in 1924. Falling world grain prices and demand, together with attempts to shield producers from the international market, led to financial difficulties in 1929/30. The government again became involved by providing financial guarantees. On August 1, 1931, the Canadian Co-operative Wheat Producers Ltd. ceased operations on behalf of the Wheat Pools and became a government agency. As a result of these difficulties, the government passed the Canadian Wheat Board Act in 1935.

From the Government's point of view, one of the primary tasks of the

-
1. During this period, concern mainly centered around the marketing of wheat with apparently much less concern for the marketing of feed grains.
 2. The CWB Act has been amended many times over the years.

Board was to dispose of the holdings of the Canadian Co-operative Wheat Producers. However, the legislation encompassed other broader objectives as follows:

- (1) To give producers some income protection through the establishment of a government guaranteed floor price for wheat.
- (2) To give producers the opportunity to obtain equal prices for their wheat regardless of when they marketed it - i.e. the opportunity for price pooling. (12, p. 20)

These broader objectives are central to understanding the evolution of the CWB and why equity and stability are important performance criteria for the CWB today.

THE WORLD WAR II AND POST WAR PERIOD (5, 6, 12, 38)

The involvement of the Canadian Wheat Board in the marketing of oats and barley developed as a result of several measures taken by the government between 1942 and 1949. These changes came about via several amendments to the Canadian Wheat Board Act and numerous Orders-In-Council specifying instructions to the Board.

A brief summary of chronological events during this period includes:

- (1) In March, 1942, the Board assumed a price support role for oats and barley within the designated area.¹ The Board was given the power to buy cash oats and barley futures at set floor prices.²
- (2) Equalization funds for oats and barley were administered by the Board starting in 1943. Funds for this program were generated via

1. The designated area refers to the provinces of Manitoba, Saskatchewan, Alberta, and the Peace River region of British Columbia as defined in the CWB Act.

2. Price support activities for oats and barley were carried out from time to time by the Board during the period 1942 to 1949.

levies on export permits.

- (3) The government suspended futures trading in wheat in September, 1943, and monopoly power over the marketing of wheat was vested with the CWB.
- (4) In March, 1947, the CWB took possession of all oats and barley in commercial position (under authority of an Order-In-Council). This action marked the beginning of a long era of Board control over feed grain marketing.

The main features of the Order-In-Council were:

- (a) Equalization payments on barley and oats were discontinued in March, 1947.
 - (b) The ceiling prices on domestic barley and oats were revised.
 - (c) Support prices for barley and oats were revised.
 - (d) The CWB became the sole exporter of Canadian barley and oats.
 - (e) All barley and oats became the property of the Canadian Wheat Board and were to be disposed of by the Board.
- (5) In 1948 the CWB became responsible for the inter-provincial marketing of feed grains.
 - (6) With the extension of the CWB Act to cover oats and barley (1949/50 crop year) and the subsequent proclamation of legislation within each of the three Prairie Provinces, the CWB gained authority over the regulation of intra-provincial marketing of feed grains.

Thus, for the first time all commercial marketing of barley and oats, exclusive of farm to farm transactions, were vested in the Board. For example, sales to feedmills were to be subject to quota and prices set by the Board. However, these changes were never

practiced by the feed industry.

- (7) As a result of difficulties in obtaining compliance, the Board removed the restrictions on the intra-provincial marketing of feed grains for domestic livestock consumption in 1960.

THE INTERIM FEED GRAIN POLICY (25, 32, 38, 53)

From the late forties to mid-1973, the Wheat Board had exclusive control over the marketing of feed grains in Canada outside the designated area. The Board priced Prairie grain in Eastern Canada in competition with U.S. corn. During the period 1969-70, surplus feed grain on the Prairies led to low non-Board prices within the designated area. At the same time, the Board practiced price discrimination, selling on the export market at prices lower than it was charging Eastern Canadian customers. The price anomalies that arose during this period resulted in political pressure being placed upon the federal government to change the mechanism for pricing of domestic feed grains.

The events outlined above led to the introduction of the Interim Domestic Feed Grain Policy (August, 1973, to July, 1974). The major criteria for the interim policy included the following:

- (1) The CWB would base selling prices for domestic feed grains outside the designated area on off-Board prices within the designated area plus marketing costs less the freight subsidy.
- (2) Prices for feed grains were guaranteed for Prairie grain producers at a level at least equivalent to the CWB initial prices. This guarantee was ensured under a program whereby the Agricultural Products Board offered to buy feed grains at a price half-way between

the initial payment and the projected final price.¹

- (3) The policy permitted interprovincial trade in feed grains within the designated area.

The interim policy was designed to provide fair and equitable feed grain prices across Canada (i.e. Eastern and Western prices related to each other, subject to adjustments for marketing and freight charges, and competitive with U.S. corn). After what appeared to be a successful start, the policy eventually failed as the price of Western grain in Eastern Canada rose above the price of imported U.S. corn. In May, 1974, the formula pricing technique was abandoned and the Board resumed previous pricing practices.

THE NATIONAL FEED GRAIN POLICY

The policy took effect on August 1, 1974 and remains in effect today, subject to some adjustments during 1976. The objectives of the policy were and continue to be:

- (1) To provide a fair and equitable base price for feed grains across Canada.
- (2) To provide relief for the producers against depressed feed grain prices.
- (3) To encourage the growth of livestock and feed grain production across Canada according to natural factors and the natural potential of the various regions of Canada. (53, p. 3)

To achieve the above objectives, a number of programs were imple-

1. It is important to note that under the policy the CWB was required to provide updated monthly estimates of final realized prices for the feed grain price pools during the crop year.

mented. Changes which were implemented that have a direct bearing on the role of the CWB in feed grain marketing include:

- (1) The CWB retained its monopoly position in the handling of export and domestic marketing of wheat, oats and barley for human and industrial consumption.
- (2) The CWB relinquished the role of the pricing of domestic feed wheat, oats and barley. Futures trading in feed grains resumed on the Winnipeg Commodity Exchange. Buyers and sellers of feed grain were allowed to trade anywhere in Canada.
- (3) The Board retained the power to impose delivery quotas on non-Board grains.¹
- (4) The CWB cash advance was increased from \$6000 to \$15000 per producer.
- (5) The CWB in conjunction with the Canadian Livestock Feed Board and the Canadian Grain Commission were responsible for maintaining and managing a reserve stock of ten million bushels of feed grains at Thunder Bay.
- (6) To ensure adequacy of supplies, the CWB offered feed grains in the domestic market at prices set with regard to competitive levels in the domestic and export market and in consultation with the Canadian Livestock Feed Board. Thus, in essence, the CWB was to become a 'residual supplier' of feed grains for the domestic market.

1976 AMENDMENTS

While at this time, several changes were made,² only one of these changes had much impact on CWB operating procedures. Effective August 1,

-
1. To date quotas have not been imposed on non-Board grains.
 2. For details of these changes see (25, 32, 38, 53)

1976, the CWB was required to offer feed grains based on a corn competitive pricing formula.¹ These offers of feed grain are made on a flat basis at Thunder Bay and at country elevators within the designated area.

1, Details of this formula will be discussed later in this paper.

CHAPTER 4

THE STRUCTURE OF THE CANADIAN FEED GRAIN MARKET

At best the structure of the Canadian feed grain market could be described as complex. Within the designated area, there were 157,306 CWB permit book holders during the 1976/77 crop year. (21, p. 34) These can be considered producers or potential producers of feed grain.

The elevator system consists of 3739 primary elevators. Ownership of these elevators is dominated by the Prairie wheat pool co-operatives. The three Prairie Pools collectively own 2225 (60%) of the primary elevators. United Grain Growers, a farmer owned and controlled grain handling company, operates 669 elevators. In addition, 5 government, 2 private, and 1 farmer owned inland terminals operate within the designated area. (13, p. 182)

Port terminals are located on the West Coast, Churchill, and Thunder Bay. Transfer elevators are located at various locations along the Great Lakes, the St. Lawrence, and at Halifax. Owners and operators of port terminal elevators and Eastern transfer elevators include the Federal Government, producer co-ops and private companies.

Elevators and terminals are licenced by the Canadian Grain Commission and are subject to the provisions of the Canada Grain Act and the Canadian Wheat Board Act. The Canadian Grain Commission is responsible for the setting of maximum handling and storage tariffs. Maximum tariffs are supposedly maintained for the protection of the Prairie farmer. However, if tariffs are set too low, they may act as a barrier to entry for new entrants into the grain handling business.

Elevators and terminals act as agents of the Board for the handling

of CWB grains. In addition, elevator companies and licenced grain dealers trade in non-Board grains (cash and futures) for their own account.

Alberta has a well developed livestock feed industry, with eight large national firms operating feed services in the province. In addition, over 50 small mills are located throughout the province. Many of these mills are associated with the larger feed companies in that they act as product dealers and distributors. (1, p. 4.15) The structure of the feed mill sector in Saskatchewan and Manitoba would be similar to Alberta but on a somewhat smaller scale due to fewer livestock being fed.

FEED GRAIN MARKETING PATTERNS

Feed grain producers within the designated area have several options for utilization and marketing of their feed grains. The CWB has direct influence over some of these marketing channels while the impact on others is indirect.

The Canadian Wheat Board exercises control and influence over the feed grain market in several ways as follows:

- (1) Pricing and sales policy for export and domestic human and industrial sales.
- (2) Marketing quota policies.
- (3) Policy toward the provision of market information to producers and the private trade.
- (4) Initial price levels to producers.
- (5) Coordination of transportation and handling network.

- (6) Stock switching policy.¹
- (7) Role as a residual supplier of feed grains under formula pricing.

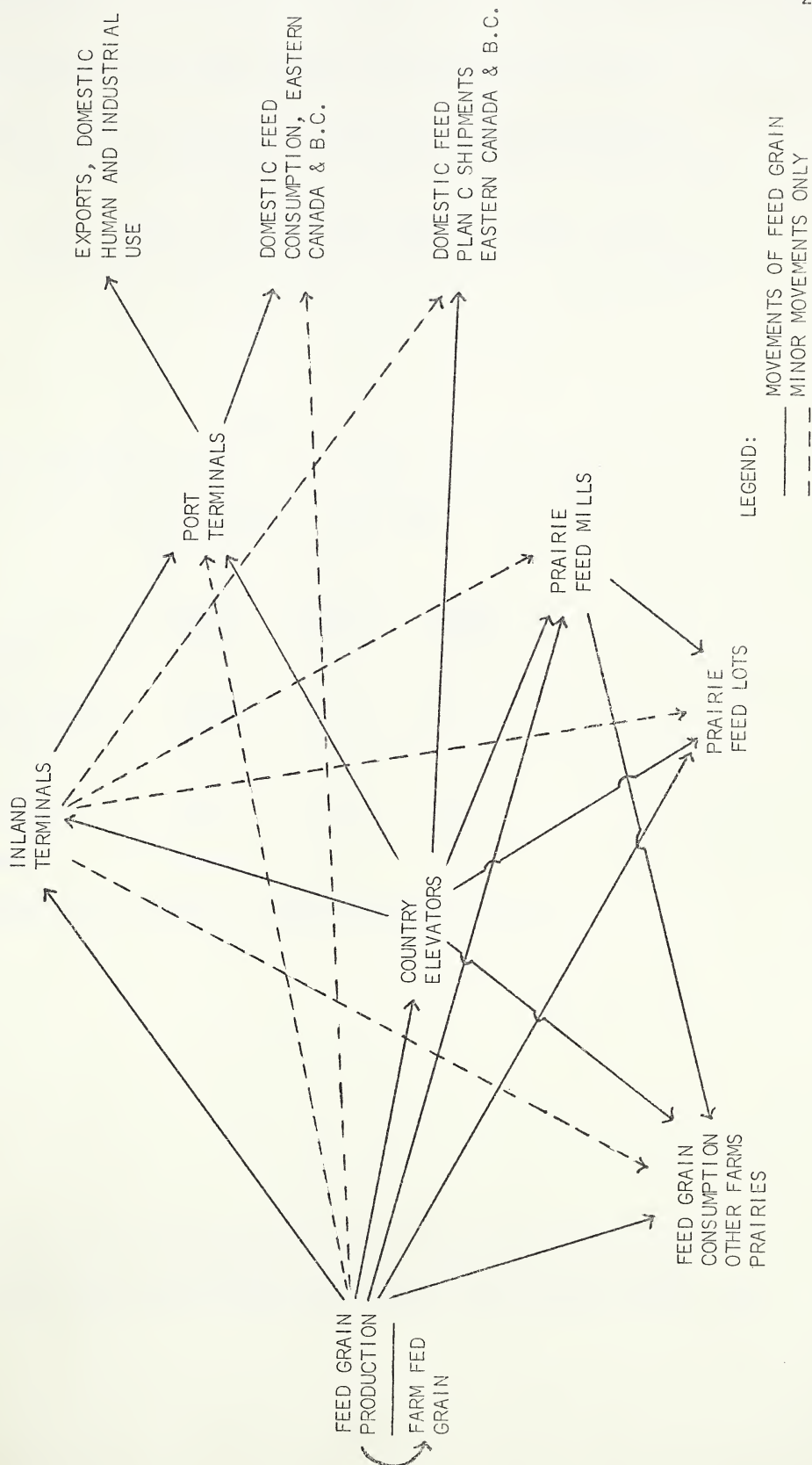
A Prairie feed grain producer has the following options to dispose of his grain:^{2, 3}

- (1) Feed the grain on his own farm.
- (2) Sell direct to other farmers anywhere in Canada.
- (3) Sell direct to feed lots anywhere in Canada.
- (4) Sell direct to feed mills anywhere in Canada.
- (5) Deliver to country elevators and inland terminals for the account of the CWB, receiving an initial payment plus any final payment forthcoming when the CWB closes out the pool for the crop year.
- (6) Platform load a car for shipment direct to a port terminal for the account of the CWB.
- (7) Deliver to a country elevator or inland terminal for direct sale to an elevator company or licenced grain dealer.
- (8) Platform load a car for shipment direct to a port terminal for

-
- 1. Stock switching refers to the exchange of ownership of Board grain in one commercial position for non-Board grain in a different commercial position. Stock switching is done from time to time to allow either the Board or the private trade to meet commitments on contracts and to avoid unnecessary transportation costs. Examples of stock switching include: CWB stocks at Thunder Bay may be switched for non-Board stocks at country elevators or vice versa; Board stocks at country elevators may be switched for non-Board stocks in another elevator within the designated area. (53)
 - 2. See Figure 3.
 - 3. The CWB has no quota control over items 1, 2, 3, and 4. The Board has direct quota control over movements of feed grain described in items 5 and 6. The Board has the power to set quotas on movements under items 7 and 8; however from 1974 to date, the Board has not exercised this power.

FIGURE 3

MARKETING CHANNELS FOR PRAIRIE FEED GRAINS



direct sale to an elevator company or licenced grain dealer.

The major movement of grain off farms is to country elevators with small amounts being delivered to inland terminals or shipped via platform loadings. Table 1 provides data showing average producer marketings through the licenced elevator system for the period 1967 to 1976.¹

TABLE 1
PRODUCER MARKETINGS THROUGH THE LICENCED ELEVATOR SYSTEM

10 year average - 1967-1976

(millions of bushels)

	<u>WHEAT</u>	<u>OATS</u>	<u>BARLEY</u>
ALBERTA	108.2	11.7	87.2
SASKATCHEWAN	318.0	12.4	78.9
MANITOBA	58.3	14.7	34.0
PRAIRIES	484.5	38.8	200.1
CANADA	496.6	40.4	204.1

Source: Canada Grains Council, Statistical Handbook 77.

-
1. During the past 3 crop years, since the inception of the current feed grain policy, deliveries of grain to the licenced elevator system have been approximately 90% CWB and 10% non-Board grains. (15)

TABLE 2

PRODUCER MARKETINGS THROUGH LICENCED ELEVATORS AS A PERCENTAGE OF
PRODUCTION

10 year average - 1967-1976

	<u>WHEAT</u>	<u>OATS</u>	<u>BARLEY</u>
ALBERTA	84.7%	11.9%	43.1%
SASKATCHEWAN	87.1%	14.2%	56.9%
MANITOBA	79.2%	23.8%	56.5%
PRAIRIES	85.5%	15.7%	49.9%
CANADA	84.4%	12.6%	47.8%

Source: Canada Grains Council, Statistical Handbook 77.

Table 2 shows average producer marketings as a percentage of average production. From the table, approximately 86% of the wheat, 16% of the oats, and 50% of the barley produced on the Prairies was delivered to the licenced elevator system. The remaining portion of the grain not accounted for by shipments to licenced elevators was retained on farms for feed and seed, or sold direct to other farms, feed mills and feed lots. Unfortunately, data is not available to provide detailed information on farm to farm, feed lot and feed mill sales.

Once grain has been delivered into the licenced elevator system within the designated area, it may flow in one of several directions. Prairie feed grain movements include the following:

- (1) Movements to ports for export.¹

1. CWB grains only.

- (2) Movements to ports for transshipment to domestic feed consumers outside the designated area.¹
- (3) Direct shipments from country elevators and inland terminals to the non-Prairie feed grain market (Plan C shipments).¹
- (4) Sales from licenced elevators to farmers, feed mills and feed lots within the designated area.^{1, 2}

PRODUCTION OF FEED GRAINS

The major feed grains produced in Canada are: barley, oats, wheat, rye and corn. Most of this production, with the exception of corn, occurs on the Prairies. Table 3 provides 10 year average production data for wheat, oats and barley.³ In addition, the table shows production for Alberta, Saskatchewan, Manitoba and the total Prairies as a percentage of total Canadian production.

-
- 1. May be CWB or non-Board grains.
 - 2. Data is not available on this type of movement.
 - 3. For annual production data, see Figures 4, 5 and 6.

TABLE 3
PRODUCTION OF WHEAT, OATS, AND BARLEY
PRAIRIE PROVINCES AND CANADA

10 year average - 1967-1976
 millions of bushels (% of total production)

	<u>WHEAT</u>	<u>OATS</u>	<u>BARLEY</u>
ALBERTA	127.8 (21.7)	98.5 (30.6)	202.4 (47.4)
SASKATCHEWAN	365.2 (62.1)	87.1 (27.1)	138.7 (32.3)
MANITOBA	73.6 (12.5)	61.7 (19.2)	60.2 (14.1)
PRAIRIES	566.6 (96.3)	247.3 (76.9)	401.2 (93.9)
CANADA	588.5 (100)	321.5 (100)	427.2 (100)

Source: Canada Grains Council. Statistical Handbook 77.

Table 4 shows wheat, oats and barley production for Alberta, Saskatchewan and Manitoba as a percentage of total Prairie production.

TABLE 4
PERCENTAGE OF PRAIRIE PRODUCTION OF WHEAT, OATS AND BARLEY
BY PROVINCE

10 year average - 1967-1976

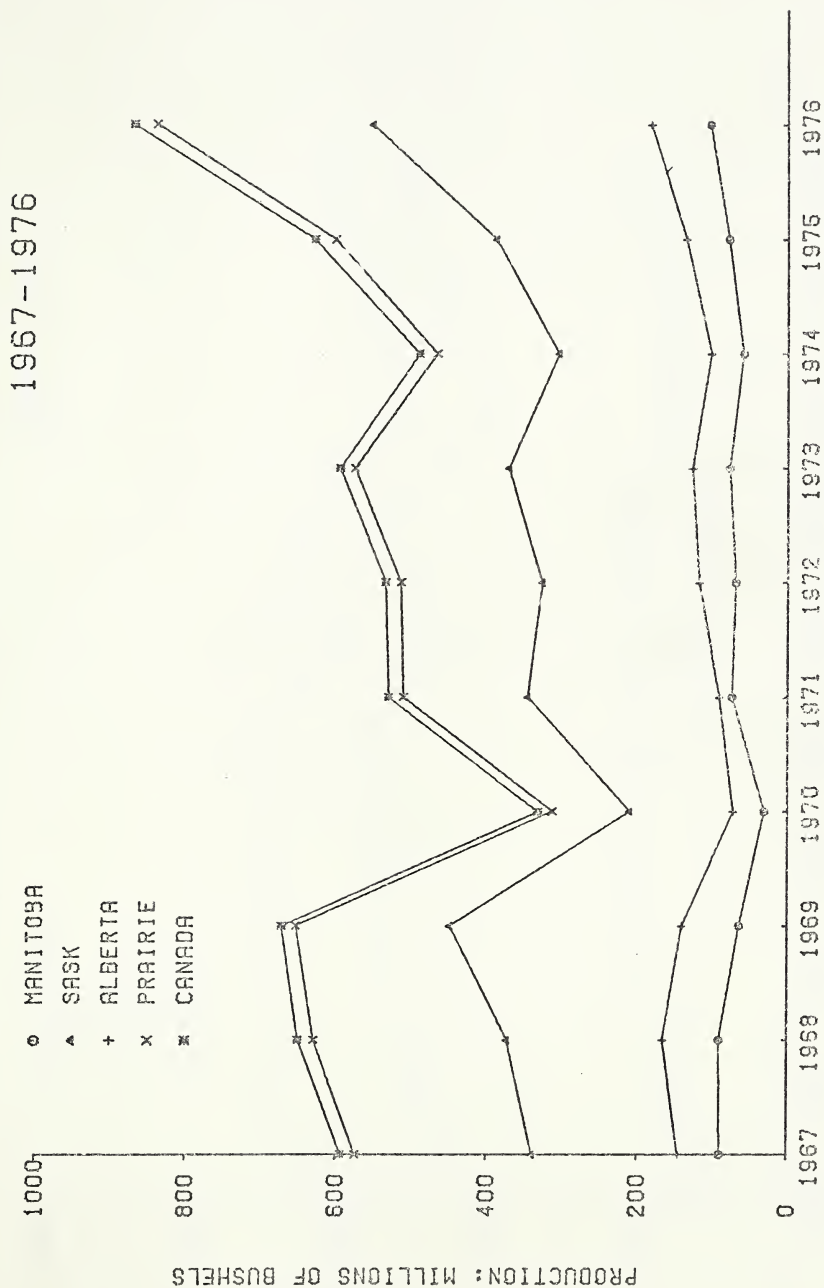
	<u>WHEAT</u>	<u>OATS</u>	<u>BARLEY</u>
ALBERTA	22.5%	39.8%	50.5%
SASKATCHEWAN	64.5%	35.3%	34.5%
MANITOBA	13.0%	24.9%	15.0%
PRAIRIES	100%	100%	100%

Source: Canada Grains Council. Statistical Handbook 77.

From the above tables, we find that Alberta is the major producing province for both barley and oats. Saskatchewan is the major wheat pro-

FIGURE 4

WHEAT PRODUCTION: PRAIRIE PROVINCES AND CANADA

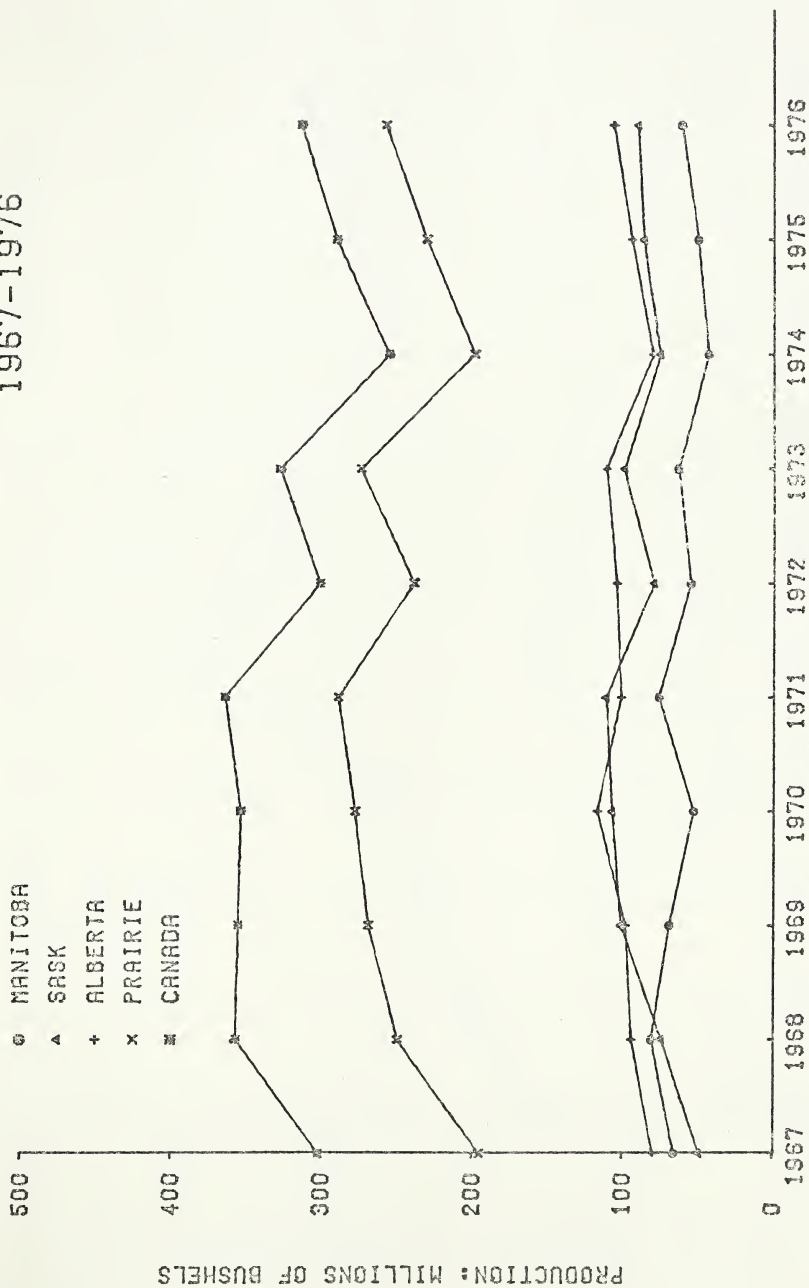


Source: Canada Grains Council. Statistical Handbook 77.

FIGURE 5

OAT PRODUCTION: PRAIRIE PROVINCES AND CANADA

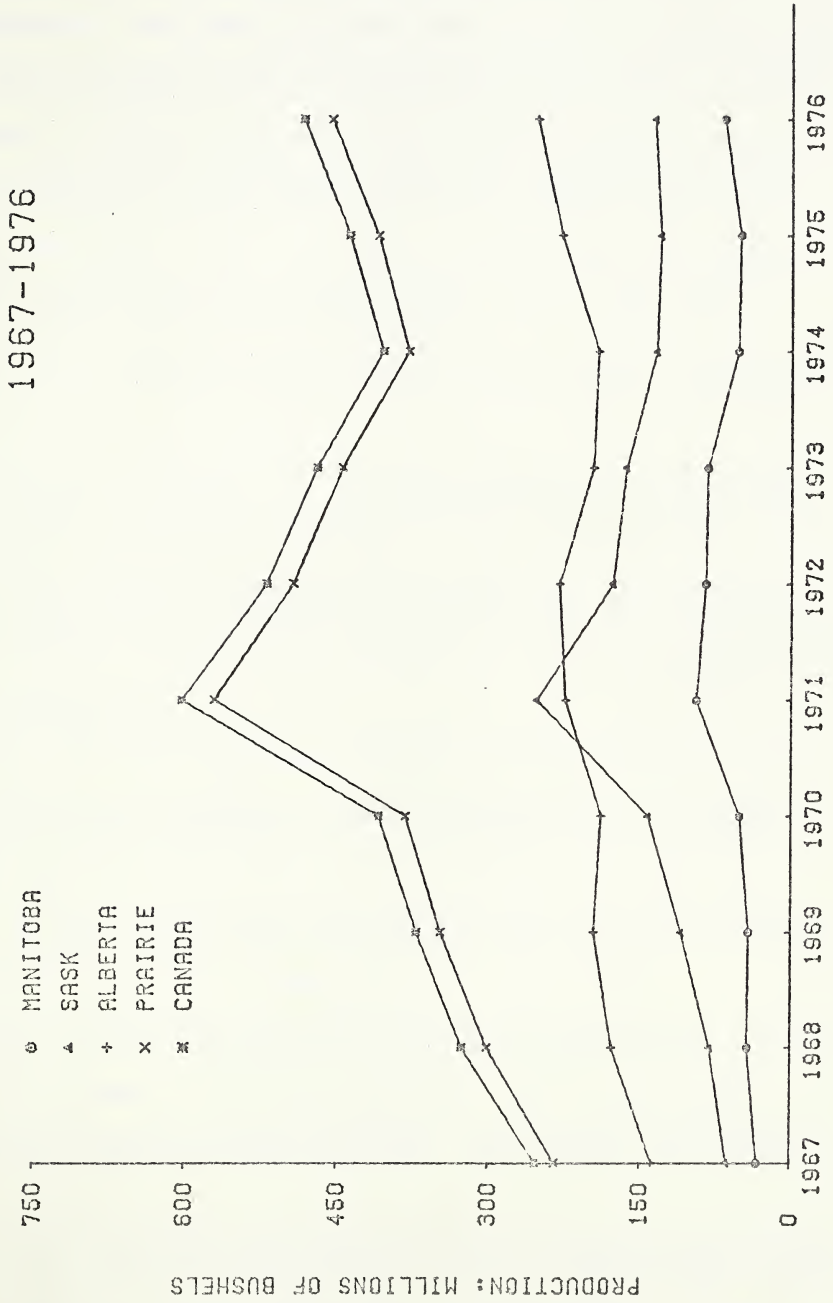
1967-1976



Source: Canada Grains Council. Statistical Handbook 77.

FIGURE 6

BARLEY PRODUCTION: PRAIRIE PROVINCES AND CANADA

Source: Canada Grains Council. Statistical Handbook 77.

ducing province.

Although wheat is a major Prairie crop, only a small portion is used as feed grain. Feed wheat is mainly used in poultry rations. However, if prices of wheat are low in relation to other grains, it begins to substitute for barley and oats in cattle and hog rations. Thus the importance of wheat as a feed grain is partially dependent upon price. During the period 1967 to 1976, the average Canadian wheat consumption for feeding purposes was 70.9 million bushels. (13, p. 29) Thus, approximately 12% of Canadian wheat production was used for feeding purposes.

From the above discussion, it is evident that wheat plays a somewhat lesser role as a feed grain than do barley or oats. However wheat production is an important component of the feed grain market because of its dominant role in Prairie grain production and potential substitutability for oats and barley.¹

Rye is of minor importance as a feed grain in both Canada and the Prairies. The average production figures (1967-1976) are as follows: Canada - 16.6 million bushels (13, p. 10); Prairies - 14.9 million bushels (13, p. 34). During this same period, only 4.4 million bushels of rye was fed to livestock in the Prairies.² (13, p. 34)

At present, grain corn production is of minor importance as a feed grain in Western Canada. Manitoba is the only Prairie province producing recordable amounts of corn for grain. The average corn produc-

-
1. Wheat is not a perfect substitute for barley in hog and beef rations.
 2. Includes waste and dockage; does not include rye sold to feeder from licenced elevators. Thus the estimate may be low.

tion during the 1967-1976 period in Manitoba was approximately 0.5 million bushels. However, corn may become more important in Manitoba as 1976 production was 1.2 million bushels and 1977 production was 1.6 million bushels. (13, p. 11) No breakdown of corn utilization is available for Western Canada. Average Canadian corn production for 1967 to 1976 was 105.2 million bushels with the majority of this production occurring in Ontario (96.7 million bushels). (13, p. 11)

UTILIZATION OF PRAIRIE FEED GRAIN (1967 - 1976)

(1) Western Canadian Feeding:

Average feed grain consumption, for feeding purposes, on the Prairies for the period was as follows:^{1, 2} wheat - 45.6 million bushels (8% of Prairie production); barley - 185.7 million bushels (46% of Prairie production); oats - 197.1 million bushels (80% of Prairie production). (13, p. 33) However, the above reported Prairie feed utilization statistics do not include sales from licenced elevators (both Board and non-Board) back into the Prairie feed grain market. Thus, the reported levels of utilization may be considered lower limits for utilization of Prairie grain for livestock feeding purposes within the Prairie Provinces.

(2) Prairie Feed Grain Utilization Outside the Designated Area:

Feed Freight Assistance statistics are a reasonable proxy for shipments of Prairie grain to areas outside the designated area for feeding purposes.¹

1. Includes waste and dockage.

2. See Appendix 1.

3. Effective August 1, 1976, Feed Freight Assistance was removed for most of Ontario and a portion of Western Quebec. Thus, these statistics will not be a valid proxy for shipments of Western grain to points outside the designated area for feeding purposes in the future.

Average freight assisted shipments for the period 1967 to 1976 were:

wheat - 21.5 million bushels (3.8% of Prairie production); barley - 39.1 million bushels (9.7% of Prairie production); oats - 28.7 million bushels (11.6% of Prairie production).¹ (13, p. 209)

(3) Average Exports, Domestic Human and Industrial Utilization of Prairie Grain (1967-1976)

Canadian data for exports, domestic human and industrial consumption are reasonable estimates for the Prairies.² This is particularly true for barley and oats as only small quantities of barley or oats produced outside the designated area enter commercial licenced elevator facilities.³ Exports, domestic human and industrial utilization were: barley - 156.5 million bushels (39% of Prairie production); oats - 14.5 million bushels (5.9% of Prairie production). (13, p.29)

Canadian wheat exports, domestic human and industrial consumption was 492.9 million bushels. (13, p. 29) However, this figure likely overstates Prairie exports, domestic human and industrial consumption by as much as 9 million bushels (i.e. producer marketings to licenced elevators outside the designated area).³ Thus Prairie exports, human and industrial consumption of wheat was approximately 484 million bushels (approximately 85% of Prairie production).

(4) Average Prairie Seed Requirements (1967 - 1976)

Prairie seed requirements were established as follows: wheat - 30.1

1. See Appendix 3.

2. See Appendix 2.

3. Average producer marketings (1967-1976) to licenced elevators in the Eastern division were: oats - 0.16 million bushels; barley - 0.54 million bushels; wheat - 8.81 million bushels. (13, p. 185)

FIGURE 7

EXPORTS OF CANADIAN WHEAT, OATS AND BARLEY.

Source: Canada Grains Council. Statistical Handbook 77.

million bushels (5.3% of Prairie production); barley - 17.0 million bushels (4.2% of Prairie production); oats - 12.9 million bushels (5.2% of Prairie production). (13, p. 33)

CHAPTER 5

THE IMPACT OF CANADIAN WHEAT BOARD OPERATIONS ON FEED GRAIN PRODUCTION AND MARKETING

This section of the paper will identify and analyze the major elements of Canadian Wheat Board operations which appear to strategically affect performance in the production and marketing of feed grains within the designated area. An attempt will be made to draw linkages between structural elements of the feed grain market, CWB conduct and the impact of the CWB on the conduct of other feed grain market participants. Having drawn these linkages, structure and conduct will be related to performance in the feed grain market. As outlined in Chapter 2 of this paper, the performance variables to be discussed include: operational efficiency, pricing efficiency, stability, equity and progressiveness. In addition, trade-offs between the performance criteria will be identified and examined.

Major areas identified for examination include:

- (1) CWB quota procedures.
- (2) CWB impact on pricing.
- (3) The impact of the CWB on the type of market information and the availability of this information to market participants.

While each of the above identified areas will be examined separately, it must be recognized that these areas are not necessarily mutually exclusive.

THE IMPACT OF CANADIAN WHEAT BOARD QUOTAS

The quota system was developed and introduced in 1940. The original objectives were primarily of an equity nature, with allocation of elevator space among producers being the major objective of CWB quota policy.

(12, p. 23) From an examination of the early history of CWB quota policy,

it appears that little consideration was given to either production or marketing efficiency. Quota policy changes were made from time to time over the period 1940 to 1970.¹ However these changes were mainly aimed at equity issues.

In January, 1970, the Honourable Otto Lang, Minister Responsible for the Wheat Board, set up a special committee to examine the quota policy and make recommendations for change. Much of what was recommended by the Boden Committee has been adopted by the Board as the basis for its current quota policy.

The Boden Committee recommended quota objectives as follows:

The primary objective of the delivery system for Western Canadian grains is to enable the Canadian Wheat Board to bring into country elevators, at the right time, the kinds, qualities and quantities of all grain required to compete effectively for market demand.

In the long run interest of the agricultural industry it must also reflect market demand back to producers.

Secondary objectives which are desirable, if consistent with the primary objectives stated above, include:

- (1) The allocation of delivery opportunities for grain in demand among producers as equitably as possible.
- (2) The provision to producers of freedom to deliver to elevator(s) of their choice.
- (3) The promotion of orderly marketing and of efficiency in the operation of country elevators, the main function of these being to handle grain rather than storage.
- (4) The development of a system as simple as possible to administer and to enforce. (8, p. 4)

In addition, the Boden Committee cited additional items they labelled principles. These should be considered secondary objectives:

- (1) Quota policy should not lead to misallocation of resources at the producer level.
- (2) Quota system should not hinder, and if possible should facilitate, the trend toward modernization and rationalization of elevator and railway facilities.
- (3) Quota system should be flexible enough to enable producers

1. For details of these changes, see (12), (21), and (42).

to adapt to changes in market conditions, good farming practices and/or public policies.

- (4) The quota system should, if possible, relate delivery opportunities to productivity. (8, p. 4)

Thus the primary objective of the present quota system may be considered to be aimed at achieving internal operational efficiency of the CWB. It is hypothesized that the provisions of the current quota and block shipping system of the Board has resulted in improvements in operational efficiency of country elevators, rolling stock and port terminals.

The weaknesses in the present quota policy appear to be in the areas of farm production efficiency, operational efficiency external to the Board, pricing efficiency and progressiveness in the non-Board market.

Farm Production Efficiency

The quota system appears to be detrimental to the achievement of optimum resource allocation in the production of grains in Western Canada. At present, the farmer's base for quota is determined by acreage. Thus quota has tended to favour mixed farmers, farmers on poorer land and the less efficient because the quota system does not take into account differing land productivity and technology. The quota system has discouraged technology which increases output per unit of land. This may well have rendered Prairie grain producers less able to take advantage of expanding markets in recent years. (46, p. 36)¹

Although wheat is not a major Prairie feed grain, quota levels for wheat may have a major impact on the production of feed grains. Low quotas on wheat, in times of surplus, may result in large acreage shifts into feed grains. These shifts may result in short run misallocation of resources in the production of feed grain. During the period 1967 to 1976,

1. Pearson (42, p. 117) supports these same views.

the average acreages of grains within the designated area were approximately: Wheat - 23 million acres, oats - 5 million acres, and barley - 10.2 million acres. (13) Thus a 10% reduction in wheat acreage, in anticipation of reduced wheat quotas, could for example translate into a 22% increase in barley acreage if all the reduction in wheat acres is shifted to barley. While this simplified example probably overstates the impact of quota changes on resource shifts, it does point out the potential impact of quotas on production shifts. For example, the acreage of barley in Alberta was 4.5 million acres in 1970. In 1971 the acreage was approximately 5.7 million acres, a 27% increase in one year. Given a relatively inelastic short run demand for Prairie barley for feeding purposes, the only way of preventing a sharp drop in Prairie barley prices is to increase exports where the demand for Canadian barley may be somewhat more elastic than in the domestic market.

If feed grain quotas are low, Prairie feed grains suffer price discounts due to increased supplies on the local Prairie market coupled with short run inelastic demand for grain for feeding purposes.

Quotas in excess of the levels required to meet CWB commitments for export and domestic human and industrial uses may result in unnecessary shortages in the Prairie feed grain market. In this case Prairie prices for non-Board feed grains may rise well beyond world prices, providing the feed grain producer with incorrect market signals, as well as forcing the livestock producer to pay prices which place him at a competitive disadvantage vis-a-vis his Eastern and U.S. counterparts.

To the credit of the CWB, they have instituted a policy of announcing minimum quota levels for the upcoming crop year prior to seeding. To the

extent that these quota guidelines are accurate and utilized by Prairie grain growers in their planting decisions, resource allocation in the production of Prairie grains should be enhanced.

Operational Efficiency External to the Board

Quotas may have a negative impact on operational efficiency in the Prairie feed grain market. This loss in operational efficiency results when feed grain moves into local elevators and then must be purchased from the elevator by feed mills, feedlots and local farmers requiring feed grain. If the grain could be moved direct from feed producer to consumer, the costs of extra trucking, elevation, storage and administrative charges could be reduced or eliminated.

The conflict between the CWB and the livestock feeder is to some extent a geographical problem. Generally southern Alberta is a feed grain deficit area while northern Alberta is generally a surplus feed grain area. Altwasser (4, p. 45) suggests that in the fall of 1976 the Board, through its quota and shipment policy, contributed to the local feed grain shortage in southern Alberta by shipping out large quantities of barley at a time when southern Alberta feeder demand was good and northern elevators were plugged. From the CWB's internal point of view, this type of action may enhance its ability to meet export and Eastern Canadian commitments as Lethbridge is several hundred rail miles closer to either Thunder Bay or Vancouver than is the Peace River region. To the extent that this type of arbitrary action is taken by the Board, its internal efficiency gains come at the expense of losses in operational efficiency in the local feed grain markets.

Pricing Efficiency in the Non-Board Market

At the Canadian Agricultural Economics Society Feed Grain Workshop in March, 1977, several speakers and conference participants (44, 47, 53) expressed concern over the ability of the Winnipeg Commodity Exchange to perform adequately as a price discovery mechanism for the non-Board feed grain market. Several factors affect the ability of the Commodity Exchange to perform efficiently as a price discovery mechanism.¹ However, quotas, or the power of the CWB to impose quotas on non-Board feed grains, do not encourage hedging activity by feed grain producers. In the event that the Board chooses to place quota on feed wheat, oats or barley, the feed grain producer may be prevented from selling cash grain simultaneously with the repurchase of his futures contract.

An additional complication in the working of the non-Board market arose from the action taken in 1976 by the Board to restrict non-Board feed grain deliveries to delivery for immediate sale only. (37, p. 39) Thus the producer wishing to sell feed grain to the non-Board market has lost the right to deliver on storage tickets for sale at a later date. This loss of storage ticket privileges further impairs the producer's ability to effectively hedge feed grains. These types of action by the CWB illustrate the impact the Board quota and supplementary regulations may have on pricing efficiency in the non-Board feed grain market.

Progressiveness

Schmitz suggests that "In recent years, largely through private capital, the innovations in grain handling systems in the United States

1. These factors will be discussed later in this paper.

have far exceeded those in Canada. . . Thus, it appears that the railways and the private grain trade in the United States have jointly developed a more efficient system of marketing grains than the Canadians." (46, p. 30) Schmitz' argument appears to be based on institutional constraints in the Canadian grain marketing system which do not exist to the same extent in the United States. While it would be unfair to place responsibility for all institutional constraints on the CWB, the quota system can be identified as one source of institutional inflexibility which may have impaired the progressiveness and innovation that Schmitz argues is lacking in the Canadian system.¹

Pearson (42, p. 74) suggests that at the farm level, CWB quotas have resulted in some of the benefits from early adoption of technology being transferred to later adopters.

Equity (Distribution)

Depending on the criteria selected, one can argue that the quota system has performed well from an equity point of view. In times of low quotas, equity in sharing elevator space and ability to generate cash flow from grain sales is of particular importance to the grain producer. Using physical acreage as the basis for quotas, equity in the sense of an equal marketing opportunity per acre has been achieved.

However, the physical acre is not the only basis with which to evaluate distribution of market share. Currently, some Prairie grain producers, governments, and academics are questioning the validity of physical acreage as the base for quota. It has been argued that, due

1. Other examples of institutional constraints include Canadian Grain Commission maximum handling and storage tariffs and the statutory freight rates for grain.

to the differences in land productivity, the physical acre is not a valid basis to determine distribution of market share among producers. From this point of view, the current quota mechanism does not relate market opportunity with ability to produce grain.

Stability

The final performance criterion to be discussed is the question of the possible impacts of CWB quotas on stability. In the context of feed grain, one must view the question of stability from both the producer and user points of view.

If we assume cash flow, or profitability, as the basis for measuring stability at the producer level, then by implication, we are concerned with both prices and quantities. As outlined previously in this chapter, quotas may force large supplies on to the non-Board market or remove supplies needed in feed grain deficit areas within the designated area. Under these circumstances, it is hypothesized that quotas actually contribute to instability within the Prairie feed grain market. Devine and Williams suggest that "It is impossible to plan for total stability . . . Planning should permit the greatest possible flexibility as the only thing that is constant is the phenomenon of change itself." (27, p. 14)

THE IMPACT OF THE CANADIAN WHEAT BOARD ON FEED GRAIN PRICING

Three major aspects of pricing will be examined: the impact of the initial price-final price mechanism; the impact of CWB formula pricing of feed grains; and the impact of the Board on price discovery in the non-Board market. In addition, one possible alternative feed grain pricing mechanism will be discussed. Elements of CWB operations will be identified and their impact on the pricing of feed grains will be evaluated.

CWB Initial Price - Final Price Mechanism

The CWB buys wheat, oats and barley on the basis of an initial payment¹ plus a final payment.² The amount of the final payment is generally unknown to the grain producer at the time he delivers grain to the account of the CWB. The seller of CWB grains does not receive his final payment until approximately six months after the end of the crop year; i.e. six to eighteen months after he has delivered his grain.

The fact that the CWB buys grain on an initial payment plus a 'promise' of a final payment creates unequal competition for the live-stock feeder. (3, p. 6) This results in the feeder on the Prairies often paying more for his grain than the CWB ultimately returns to the grain farmer. In the crop year 1974/75, the Alberta livestock industry paid \$2.49/bushel for barley while the CWB only returned \$2.14/bushel. (50) The grain farmer's uncertainty as to what the real value of his feed grain is, leads to pricing inefficiencies.

The initial payment is conventionally set at about 70% of the anticipated total payment.³ As initial payments are set prior to seeding, market developments over the subsequent crop year often result in initial

-
1. Initial payments are established by the Governor-in-Council of the Government of Canada on an annual basis. (28, p.4)
 2. Total revenue from Board sales, less initial payment, less CWB operating charges, divided by the number of bushels handled by the Board, determines the amount per bushel the farmer will receive as a final payment. Any deficits in a pool account are paid to the CWB by the Federal Government.
 3. Initial price as a percentage of total realized price has varied considerably over the years. For example, initial payments in the crop year 1968/69 were 100% of total realized price (i.e. no final payments). However, the initial payments in 1973/74 were approximately 50% of total realized price. (20)

payments at inappropriate levels (28, p. 4). Adjustment payments can and have been made during certain crop years to account for new market developments. However, such adjustments are likely to lag general market price developments due to the implicit guarantees that are involved in the adjustments (28, p. 4).

If CWB initial prices are near or above non-Board and local prices, the majority of off-farm feed grains sales flow to the Board. Conversely, if initial payments are low, Prairie grain producers are reluctant to sell to the Board.

In a situation where feed grain prices decline over the crop year (as in 1974/75), Prairie feed grain producers may prefer to deliver to the CWB given the possibility that the Board has committed feed grain at previously higher prices (28, p. 31). This results because the pooled price will be higher (if the CWB in fact forward sold feed grains) than the farmer would receive on the open market. In the reverse situation, where prices are rising, the seller of feed grain may be reluctant to sell to the Board. In this case, forward selling by the Board would likely result in a lower pooled price than the farmer would receive in the open market or by waiting to sell into the new crop year pool (28, p. 31).

From the previous discussion, it is evident that the combination of the initial price mechanism and price pooling may lead to anomalies in the feed grain market under changing world market conditions. The anomalies are the result of rigidities built into CWB procedures. For example, initial payments cannot be reduced in times of falling world markets. Also, as mentioned previously, because of the implicit price guarantee built into initial payments, the Government appears reluctant to raise initial prices until it is completely clear that higher initial

prices are warranted. Thus the institutional procedures of the CWB and the Federal Government result in reductions in both pricing and operational efficiency in the Prairie feed grain market, under certain market conditions.

The CWB price pooling procedures provide price stability within each crop year.¹ However, "the Board has achieved little in terms of providing stability for the grain producer's income from year to year through its price pooling facilities." (28,p.4). In addition, the CWB price pooling procedures and the associated anomalies that arise from time to time add a measure of instability to the non-Board and local feed grain markets. CWB induced instability in the non-Board market arises due to the creation of artificial shortages or surpluses of feed grain available to the non-Board market.

CWB Formula Pricing

The formula pricing mechanism adopted in 1976 was the result of a joint agreement between the CWB and the Canadian Livestock Feed Board. Before attempting to evaluate the impact of formula pricing on performance in the feed grain market, it is useful to clarify the mechanism and the basis of formula pricing.

The logic behind the formula includes:

- (1) There is a fairly high degree of substitutability among feed grains depending upon price and feeding value (25, p.64).
- (2) The nutritional value of feed grains is determined mainly from their energy and protein content which varies from one grain to another, and also varies for a given grain among different feed uses (25,p.64).
- (3) U.S. corn and soymeal are the leading sources of feed grain and protein

1. The farmer receives the same price within a given crop year regardless of when he sells to the Board.

supplement traded in world markets. These are also the only major feedstuffs imported into Canada on a regular basis¹ (25,p.64).

- (4) Using average energy and protein content and market prices for corn and soymeal, unit values for energy and protein can be developed. The unit values may then be applied to the energy and protein content of wheat, oats and barley in their leading feed uses to determine competitive market values for these grains in relation to corn and soymeal (25,p.64).
- (5) The long term soymeal-corn price ratio was calculated to be 1.8 to 1. Values for wheat, oats and barley when the soymeal-corn ratio is 1.8 to 1 are taken as base values. As the price of soymeal rises in relation to corn, the higher protein content of wheat, oats and barley becomes more valuable. Thus, their value in relation to corn increases. Also, the converse applies when soymeal prices fall in relation to corn (25, p.64).
- (6) Feeding uses for each grain on which the formula is based are: wheat for broilers, oats for dairy cattle and barley for hogs (45, p.11). Given the above logic, the following table shows the formula price relationships between corn and Canadian wheat, oats and barley.

1. Corn imports are mainly into Eastern Canada.

TABLE 5

DOMESTIC FEED GRAIN PRICE RELATIONSHIPS¹
 (all values per ton basis Montreal)

<u>SOYMEAL (49% Protein)</u> <u>to CORN PRICE RATIO</u>	<u>Derived Canadian Prices as a % of #3Y U.S. Corn</u>		
	<u>#3 C.U. Wheat</u>	<u>#1 F. Oats</u>	<u>#1 F. Barley</u>
3.0:1	114%	95.06%	100.06%
2.5:1	109%	91.9%	96.9%
2.2:1	106%	90%	95%
2.0:1	104%	88.76%	93.76%
1.8:1 (base)	102%	87.5%	92.5%
1.6:1	100%	86.23%	91.23%
1.5:1	99%	85.6%	90.6%
1.4:1	98%	84.97%	89.97%
1.2:1	96%	83.7%	88.7%
1.0:1	94%	82.44%	87.44%

Source: Alberta Agriculture, Market Analysis Branch, July 29, 1976.

Application of the formula:

- (1) The formula starts with the price of cash corn on board vessel at Chicago or Toledo during the navigation season. When navigation is closed, March futures are used.
- (2) The second step is to determine the value of corn basis Montreal. Chicago price plus transfer costs, exchange and the 8¢ tariff are used to determine the value of corn at Montreal. Transfer and tariff charges in 1976/77 were approximately 33¢ to 35¢ per bushel (25, p.65).
- (3) The formula is then applied to determine the value of Canadian wheat, oats and barley at Montreal.

1. To accommodate variations in relative supply conditions, a price 'tolerance range' was included in the formula as follows: Wheat $\pm 2\%$, Oats $\pm 4\%$, Barley $\pm 2\%$.

- (4) The in-store Thunder Bay offering price is taken to be Montreal price less transportation and handling charges. Transportation and handling charges in 1976/77 were approximately: wheat - 30¢/bu., oats - 27¢/bu. and barley 28¢/bu. (25,p.65).
- (5) The CWB also offers feed grains on the Prairies at the Thunder Bay daily offering price less freight at Crow rates. Sales are arranged through country elevators (25, p.65;45).

Criticisms of the formula:

- (1) The CWB formula offering price assumes we are on an import basis for feed grains in Canada, when in fact Canada is a net exporter of grains (4, p.44). Thus the spatial price relationships are distorted by the formula.
- (2) The price relationship between Thunder Bay and Prairie locations is based on Crow rates rather than compensatory rates. Under conditions of tight Prairie supplies of feed grain, Crow rates have an impact on non-Board Prairie feed grain prices as well as on the formula price.
- (3) The formula only takes freight into account between Thunder Bay and Prairie points. However, grain purchased out of country elevators would not incur full carrying charges. Neither would the grain incur the cleaning charge if sold at country elevators that it does if sold under the formula at Thunder Bay. Thus spatial price relationships are not adjusted for true differences in transfer costs between Prairie locations and Thunder Bay (45, p.15).
- (4) When navigation is closed, the cost of moving corn from Chicago to Montreal is still based on water rates which are generally lower than truck or rail rates (45, p.12).

- (5) Many Western Canadian elevators charge a load out fee of approximately 3¢/bu. on feed grain. It is questionable whether this load out fee is warranted. Such a tariff does not apply when elevators load rail cars (this service is provided as part of the elevation tariff) (45, p.15).
- (6) Any legitimate differences in price between U.S. corn and Canadian feed grains which may arise because these grains have more than one use, whether or not substitutions can occur, cannot be recognized under the formula. For example, there is no provision to recognize the demand for barley as a food and industrial grain (e.g. malt) (45, p.14). Under the formula, barley is generally priced lower than corn. However, there have been occasions where U.S. barley has been at a premium to U.S. corn. The reason for this may be attributed to the demand for barley as a food and industrial grain. This may be particularly true under conditions of relatively tight barley supplies. (40)
- (7) From an animal nutrition point of view, the formula has anomalies with respect to Western feeding practices. For example, in the case of barley, the formula over values the protein component of barley when used in ruminant feeding. Low cost non-protein nitrogen is an important source of supplementary protein for beef cattle fed in Western Canada. (4, p. 44)
- (8) The corn formula price tends to tie the Canadian grain market closely to the U.S. market. Therefore conditions largely internal to the U.S. may create anomalies with respect to formula pricing in Canada. For example, a strike at U.S. ports would tend to drive U.S. corn prices down which, via the corn competitive formula, would result in lower CWB

asking prices for Canadian feed grain. Normally a strike at U.S. ports would tend to result in higher Canadian prices as U.S. supplies are temporarily held off the world market. (45, p. 12) In September, 1976, low water levels threatened to curtail export movements of U.S. corn, resulting in a drop in U.S. corn prices. In this case, CWB asking prices for feed grain were lowered by the formula at a time when the reverse effect on price may have been justified. (37, p. 37) MacMillan concludes that "While we should recognize that there must always be some interrelationship between Canadian and U.S. markets, the present system probably makes the Canadian market more dependent than it should be on technical considerations in the U.S. market that are quite unrelated to the Canadian scene." (37, p. 38)

- (9) The CWB corn competitive formula "effectively establishes ceilings on feed grain prices across Canada" (53, p. 6) in relation to U.S. corn. However, the formula does not provide a floor price for Western feed grains on the non-Board market. The U.S. loan rate serves as a floor for U.S. corn prices, thus providing a floor under CWB formula prices. However in times of surplus feed grains on the Prairies, the local and non-Board markets would likely be discounted relative to CWB formula prices. Under these circumstances, the CWB would not be selling any feed grains within the designated area.

An efficient feed grain market in Western Canada requires feed grain prices to accurately reflect temporal, geographic and quality differences vis-a-vis Eastern Canadian and U.S. feed grain. From the above discussion, it appears that CWB corn competitive pricing does not meet the criteria required for a price efficient market.

Several of the factors outlined lead to anomalies in spatial price relationships. Other factors limit the ability of the formula to reflect quality differences. Inter-temporal price relationships are generally reflected in the formula via carrying charges for U.S. corn. However, as mentioned previously, the formula does not allow for reduced carrying charges on grain purchased at Thunder Bay.

The formula may contribute to price stability in the sense that peaks in the non-Board price would be removed as the Board is compelled to offer grain at the formula price. However, the formula has no power to prevent depressed non-Board prices on the Prairies. Thus formula pricing has rather limited power as a stabilizer of the Prairie feed grain industry.

It is difficult to evaluate formula pricing from either an equity or progressiveness point of view. To the extent that anomalies occur under the CWB formula, it is reasonable to suggest that inequities also occur vis-a-vis the price relationships that would prevail under perfect competition. However, given market imperfections due to institutional factors and other structure elements existing in the feed grain market, the case can be made for formula pricing as a tool to prevent certain market inequities. With respect to progressiveness, it can be argued that the existence of formula pricing is a deterrent to the development of innovative marketing techniques. For example, in the absence of formula pricing, there may be more incentive to develop forward contracts for feed grain.

The Impact of the CWB on Price Discovery in the Non-Board Market

Aspects of CWB operations with respect to initial price-final price, price pooling and formula pricing have been discussed in previous sections

of this chapter. Thus the discussion in this section will mainly be confined to the impact of the CWB on price discovery on the Winnipeg Commodity Exchange.

A viable futures market is an important element of an open market system. Futures trading allows producers, elevators, processors and final users of feed grain an opportunity to hedge their transactions and inventories, hence providing protection against risk. Further, a viable futures market provides a mechanism for efficient price discovery. To be effective as a price discovery mechanism and as a risk shifting tool, the market must be active, requiring participation of both hedgers and speculators. Trading volumes on the Winnipeg Commodity Exchange have been low for feed grains since the inception of the feed grain policy. (53, p. 4) Storey et al (49) suggest that the futures market has had difficulty in absorbing hedging activity without causing downward (or upward) pressure on prices.

Inverted markets¹ have been common in Winnipeg feed grain futures contracts. (49; p. 6.1; 53, p. 4) This suggests inadequate performance in the non-Board feed grain market.

The possibility exists that elevator company margins are higher than they need to be because of the difficulty in reducing price risk. (49, p. 6.10) If indeed, elevator margins could be reduced given a more viable futures market, this would result in an improvement in operational efficiency.

The size of the domestic feed grain market places limits on the volume of trading on the Winnipeg Commodity Exchange. Also, the fact that

1. An inverted market is one which does not reflect normal carrying charges.

the CWB has exclusive jurisdiction over export and domestic human and industrial markets reduces the potential volume of trading.

CWB formula pricing may reduce the incentive of feed users to hedge their supplies of feed grain. This suggestion is based on the fact that "Livestock feeders and feed mills receive a measure of price protection" (53, p. 7) under the formula, and hence a lesser need to provide their own price protection via hedging.

A Current Approach to Feed Grain Pricing

Devine (26) has proposed a mechanism where purchasers of feed grain could buy from the Board at export prices less full transfer costs. The seller would receive the usual initial plus final payment of the CWB. The grain would be weighed and graded at country elevators and the CWB would handle the administration of the transaction. These services would be provided for local transactions of feed grain at three or four cents per bushel, rather than the usual elevation and handling charges if the grain is bought by the elevator company and resold to a feeder.

It appears that improvements in operational efficiency in the local market would result from adoption of the Devine proposal. However, these improvements may come at the expense of pricing efficiency. This appears to be the case for several reasons:

- (1) The concept could further weaken the Winnipeg Commodity Exchange as a price discovery mechanism.
- (2) The local price would be based on CWB export offering prices which may not be valid prices (for example, the CWB appears to price itself out of the market when it has committed all the grain it can move).
- (3) There is no mechanism to solve the problem of distressed price selling

in times of gross surpluses of grain on the Prairies. In times of surplus Prairie feed grains, the local feed grain purchasers would not buy from the Board if farmers were willing to sell outside the Board at discounted prices.

- (4) If grain sold in this manner was subject to quota, as recommended by the Saskatchewan Government (45, p. 18), it is difficult to see where the vendor of feed grains would have any incentive to sell grains other than in the usual manner.

MARKET INFORMATION NEEDS IN THE FEED GRAIN MARKET AND THE IMPACT OF THE CANADIAN WHEAT BOARD

The availability of price information to the livestock - feed grain industry is of particular importance. Feeding margins are directly determined by grain and livestock prices. Uncertainty in these prices, or prices resulting in lower margins, act to restrain livestock production. (44, p. 83)

In a world of imperfect knowledge, perfect market information is not attainable. However as a general rule, markets will function better with more information than with less. (52, p. 146) The manager will seek market information up to the point where the marginal benefit of the information equals the marginal cost of obtaining the additional information.

Given the existence and conduct of the CWB, the point at which the marginal benefits equal the marginal costs of additional information results in less market information being obtained under the CWB system than would be the case in a more open market. More simply stated, the Board appears to impede the availability of market information and the

flow of this information to market participants.

The CWB is reluctant to divulge information with respect to volumes and prices it receives for export sales. The farmer's (and other market participants') need to know prices is now countered by the Board's asserted need to maintain secrecy to protect its customers and to ensure its best success in sales negotiations. The Board may also find its price secrecy helpful in allowing price-cutting to enter new markets. (44, p. 82)

It is recognized that if all CWB sales information were immediately made public the end result would be an erosion in its market power as a state trader in grains. Notwithstanding this benefit, the negative impact of lack of information manifests itself in misallocation of resources in production of grain, livestock feeding, operational and pricing efficiency, and possibly stability and progressiveness. Thus there appears to be definite trade-off between the benefits of CWB secrecy versus the costs to the farmer and feeding industry of maintaining this secrecy.

It is difficult for producers and users of feed grain to overcome this lack of information and predict, with any degree of accuracy, CWB realized prices due to lack of knowledge in the following areas: precise CWB selling prices, actual volumes sold, length of CWB pooling period, inventory shifts from one CWB pool to the next and CWB operating expenses. Thus for these reasons, only a general indication of market prices and trends in the export market can be determined.

Some possible CWB price indicators include: announced CWB initial prices and quota levels, CWB export offering prices for wheat, CWB offering prices for malt barley, and formula prices for domestic feed

wheat, oats and barley.¹ Non-CWB price indicators include Winnipeg Commodity Exchange futures and cash prices for feed grains and local prices for feed grains provided by the Alberta Grain Commission or the Canadian Livestock Feed Board. In addition, U.S. futures and cash prices can be used as general price indicators. However, as mentioned, these sources may be subject to large error when an attempt is made to use them as indicators of CWB realized prices basis country elevators for any given crop year.

1. The CWB does not publish export offering prices for oats and barley.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

SUMMARY

The previous chapters have identified and analyzed the impact of the most relevant aspects of CWB operations on the performance of the Prairie feed grain market. The major areas of CWB impact have been discussed based on the performance criteria selected. The criteria used were: operational efficiency, pricing efficiency, stability, equity, and progressiveness.

Operational Efficiency

The present quota policy is primarily concerned with operational efficiency in the movement of CWB grains. However, it appears that little consideration has been given to the impact of quotas on production and non-Board marketing of feed grains. Quotas have a negative impact upon resource allocation at the farm level. CWB quotas and shipment procedures may reduce operational efficiency in the local market due to unnecessary handling and transportation of feed grain.

It is hypothesized that lack of knowledge of final payments leads to misallocation of resources in the production of crops and in livestock feeding. Lack of knowledge of realized CWB prices results in losses in operational efficiency in the non-Board market. Price pooling and rigidities in initial price levels in times of changing market conditions lead to operational inefficiencies in the non-Board feed grain market.

Pricing Efficiency

Pricing efficiency is concerned with the efficiency of the price discovery mechanism. Pricing efficiency in the feed grain market requires

that prices accurately reflect temporal, spatial, and quality differences. The following areas of CWB operations were identified as having negative impacts upon pricing efficiency in the non-Board feed grain market: quotas on CWB wheat, oats, and barley; the power to set quotas on non-Board feed grain; removal of storage ticket privileges for feed grain; lack of knowledge with respect to final payments; rigidities in the initial price-final price mechanism and price pooling; and anomalies within the corn formula. These factors serve to distort spatial price relationships within the designated area, between Western Canada and Eastern Canada, and between Western Canada and U.S. markets. The above factors also tend to reduce the ability of the Winnipeg Commodity Exchange to function as an efficient price discovery mechanism.

Stability

Producer organizations, agri-business, governments, and academics have expressed concern with respect to stabilization in agriculture. The problem of instability was one of the forces which led to the establishment of the CWB.

Due to price pooling, the Board is able to stabilize CWB grain prices within a given crop year. The Board's power to stabilize prices of CWB grains from year to year appears limited. However, the Board, via quota and shipment procedures, rigidities in initial prices and pooling procedures, and price secrecy appears to have contributed to instability in the non-Board market.

Equity

Equity considerations have been a major factor in the development and operation of the CWB over the years. However, economists have dif-

difficulty dealing with the concept of equity or distribution. The problem is two-fold: first, there is the difficulty of defining the criteria with which to determine equity and, secondly, economists face certain limitations with respect to the body of theory currently used to determine whether a particular pattern of distribution is better than all other possible patterns of distribution. Thus, attempts to deal with equity or distribution considerations essentially rely upon value judgements of economists or others.

CWB quotas have been an equitable method of allocation of market share assuming the physical acre as the criterion. However, some farmers are beginning to question the physical acre as the basis for determining market share as it does not take differences in land productivity into consideration.

Progressiveness

Progressiveness can be considered on the basis of innovation and adoption of new technology in the production and marketing of feed grain. Factors such as CWB quotas, initial price-final price mechanism, price pooling, and formula pricing appear to mitigate against adoption of new technology. The problem is the result of institutional inflexibility. For example, the inflexibility inherent in the above factors may reduce the pay-off from investment in new technology at the farm level and in the storage, handling, and transportation of grain.

RECOMMENDATIONS

While there has been considerable dialogue and debate in recent years, there has been little empirical research in feed grain marketing. Thus there is a need for research in the area of feed grain marketing and policy.

More specifically, research needs to be conducted in a variety of areas where the Board has an impact on the feed grain market.

Before a proper role for the CWB in the marketing of feed grain can be determined, the objectives of the current feed grain policy¹ should be reviewed and clarified. Once the goals and objectives of feed grain policy have been clarified, the role of the CWB in the feed grain market can be examined. Performance goals for the CWB, and the trade-offs between these goals, can be determined. The next step would be the examination of possible procedures whereby the performance goals specified for the Board can be achieved.

The above approach to the marketing and policy issues with respect to the role and impact of the CWB in the feed grain market suggests possible areas of research which should be conducted. The following areas of research have been identified as being necessary to provide a basis for policy recommendations.

(1) An objective study should be conducted to determine producer and user preference as to the type of feed grain marketing system that is desired.

For example, three major possibilities include:

- (a) A mixed system of Board and non-Board marketing of feed grains much as we have at present.
- (b) A completely open market for barley and oats. Under this option, the CWB would become a Wheat Board for wheat only. Exports, domestic human and industrial and feed barley and oats would be marketed by the private trade.
- (c) A greater involvement for the CWB in the marketing of feed grains.

1. Noted in Chapter 3; also see Malczyk and Hawkins (38) and Wilson (53).

Varying degrees of additional involvement and control can be envisioned under this option. Options range from changes to allow producers to participate in CWB price pooling for local sales¹ to full control of feed grain sales other than local sales within the designated area.

(2) Assuming the present system of Board, non-Board marketing is to be retained, then improvements in the formula price mechanism are required. Research should be undertaken to determine ways of removing anomalies with respect to formula pricing noted in Chapter 5. Areas requiring research with respect to the formula include:

- (a) An analysis of factors determining world demand for barley and corn as feed, food and industrial grains would provide the basis for revision of the pricing mechanism.
 - (b) The nutritional basis for evaluating corn vs. wheat, oats and barley when fed to various classes of livestock appears to require further examination.
 - (c) Transfer costs and spatial price relationships between the base point and points within the designated area require further research.
- (3) Presently there is no organized local market for feed grains on the Prairies. It appears that both pricing and operational efficiency could be improved in local markets.

One possibility for improving pricing and operational efficiency would be simply to improve the quality and quantity of market information available. The Alberta Grain Commission has taken positive steps to improve the quality and availability of price information in the local and

1. See Devine (26) and Saskatchewan Department of Agriculture (45) for more details.

non-Board markets. This price information system should be extended to cover the entire designated area rather than just Alberta. The information could be supplemented with additional information on expected realized prices and quota levels.

Research should be conducted to determine the benefits and costs of providing additional CWB quota and price information to producers. The major benefits would be improved resource allocation and market efficiency in the non-Board market while the major costs would be the possible erosion of CWB monopoly power in international markets and the cost of extending the information to producers and users of feed grain.

One proposed solution of the CWB secrecy dilemma is for increased analysis by university researchers of final payment prospects. These could be published to help both crop producers make their production and marketing decisions, and livestock producers to make their production (and to a lesser extent, their marketing) decisions. (44, p. 83)

(4) One recommendation that has been made from time to time is that the length of the CWB pooling period be shortened. This recommendation has been based on the possibility that a shorter pooling period would help keep the CWB realized price and local Prairie prices more in line. The practicality and desirability of this proposal has been questioned. (51) However, research into the feasibility and relative merits of this proposal should be conducted.

(5) An evaluation of alternatives for determining quota base should be conducted. Emphasis would be on determining a valid basis for quota which takes productivity into account. One possible solution would be

to weight the physical acre base by some index which reflects productivity. The physical acre times a productivity index would tie marketing opportunity to the production potential of farm land. If such a system can be devised and implemented, resource allocation in the production of Prairie grains should be improved.

(6) While quotas can contribute to instability, it may be argued that a well managed quota system could be used as an instrument to achieve stability at the farm level. There does not appear to be any research which has attempted to determine the impact of CWB quotas on the long run stability of the Western grain industry. The impact of the present quota system on stability should be researched.

(7) The feasibility of removing quotas entirely should be investigated. Possibly some other instrument with less rigidity could be used in place of quotas. For example, it may be possible to devise a system of price premiums and discounts by type and grade to move grain into the Board's hands as required. This suggestion runs counter to the traditional concept of distribution of marketing opportunity and no doubt the acceptability of such a system at farm level is open to question. However, this does not mean that the issue should not be researched.

(8) The Devine proposal¹ has merit and should be researched further.

A reasonable assumption is that the CWB will continue to exist and operate. Given this assumption, the challenge is to find ways and means whereby the Board can enhance performance in the feed grain market. Improved performance in the feed grain market in Western Canada is necessary if our livestock industry is to continue to develop and meet the competition

1. Described in Chapter 5; see Devine (26) for further details.

from other parts of Canada and the United States.

To improve performance in the feed grain market, we should have a sound feed grain policy. The types of research recommended, if conducted, would contribute valuable information for the formulation of feed grain production and marketing policy recommendations.

BIBLIOGRAPHY

1. ALBERTA AGRICULTURE. AgriProbe - Phase I. Edmonton: Alberta Agriculture, 1977.
2. ALBERTA AGRICULTURE. Quarterly Market Analysis. Edmonton: Alberta Agriculture, July 29, 1976.
3. ALTWASSER, Garnet E. "Beef Situation". Survival - Today's Goal of Western Canadian Meat-Livestock Industry. Edmonton: Alberta Feed Industry Conference, 1977.
4. ALTWASSER, Garnet E. "Domestic Feed Grain Marketing - Producer Viewpoint." Canadian Journal of Agricultural Economics, March, 1977.
5. BAILEY, Richard C. "Interregional Feed Grain Movement." Unpublished M.Sc. thesis, Department of Agriculture Economics and Rural Sociology, University of Alberta, 1972.
6. BAILEY, Richard C., Murray H. Hawkins, and Michele M. Veeman. Interprovince Barriers in the Prairie Feedgrains Market. Bulletin 16, Edmonton: Department of Agricultural Economics and Rural Sociology, University of Alberta, Undated.
7. BAIN, Joe S. Industrial Organization. New York: John Wiley & Sons Inc., 1968.
8. BODEN, E. A., et al. "Report on Delivery Quota System for Western Canadian Grain." February, 1970. (Mimeograph)
9. BREIMYER, Harold F., and V. James Rhodes. "Livestock Aspects of Feed Grain Policy." American Journal of Agricultural Economics, December, 1975.
10. CANADA GRAINS COUNCIL. An Evaluation of the Canadian Domestic Feed Grains Market. Winnipeg: CGC, 1974.

11. CANADA GRAINS COUNCIL. Projection of Market Demand for Livestock and Feed Grains of Canada, 1975-1985. Winnipeg: CGC, 1974.
12. CANADA GRAINS COUNCIL. State of the Industry. Winnipeg: CGC, 1973.
13. CANADA GRAINS COUNCIL. Statistical Handbook 77. Winnipeg: CGC, 1977.
14. CANADIAN FEDERATION OF AGRICULTURE. "National Feed Grain Policy." July 1972. (Mimeograph)
15. CANADIAN GRAIN COMMISSION. Visible Grain Supplies and Disposition. Winnipeg: Canadian Grain Commission. Various issues.
16. CANADIAN INTERNATIONAL GRAINS INSTITUTE. Grains and Oilseeds - Handling, Marketing, Processing. Winnipeg: CIGI, 1975.
17. CANADIAN LIVESTOCK FEED BOARD. Annual Report Crop Year 1975/76. Montreal: CLFB, 1977.
18. CANADIAN LIVESTOCK FEED BOARD. Domestic Feed Grain Market Annual Review Crop Year 1976-77. Montreal: CLFB, 1977.
19. CANADIAN LIVESTOCK FEED BOARD. Grain Facts. Montreal: CLFB, Various issues.
20. CANADIAN WHEAT BOARD. Annual Report. Winnipeg: CWB. Various issues.
21. CANADIAN WHEAT BOARD. "Permit Books, Quotas and How They Fit Together." Grain Matters. Winnipeg: CWB, June, 1977.
22. CARMAN FARM BUSINESS ASSOCIATION. "Presentation to the Ad Hoc Committee of the Canada Grains Council re. the Evaluation of the Domestic Feed Grain Market." January, 1972. (Mimeograph)
23. CAVES, Richard. American Industry: Structure, Conduct, Performance. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1967.

24. CLODIUS, R.L., and W.F. Mueller. "Market Structure Analysis As An Orientation for Research in Agricultural Economics." Journal of Farm Economics. August, 1961.
25. COFFIN, H. Garth. "The Case For Formula Pricing of Canada's Feed Grains." Canadian Journal of Agricultural Economics, March, 1977.
26. DEVINE, D. Grant. "The Livestock Crow Extension Package." University of Saskatchewan, 1978. (Mimeograph)
27. DEVINE, D.G., and C.M. Williams. "A Summary Report of the Meat-Grain Interface to the Standing Senate Committee on Agriculture." Meat-Grain Interface Project 1976-77. Vol. I. Saskatoon: University of Saskatchewan, 1977.
28. FOOD PRICES REVIEW BOARD. Feed Grains Policy in Canada. Ottawa: FPRB, 1975.
29. GOVERNMENT OF CANADA. Canada Grain Act. Ottawa: Queen's Printer, 1970.
30. GOVERNMENT OF CANADA. Canadian Wheat Board Act (Office Consolidation). Ottawa: Queen's Printer, 1972.
31. HALL COMMISSION. Grain and Rail in Western Canada. Ottawa: Government of Canada, 1977.
32. HARVEY, D.R., "Domestic Feed Grain Marketing - A Federal Government Viewpoint." Canadian Journal of Agricultural Economics, March, 1977.
33. JONES, B.F., John W. Sharp, and Dean Baldwin. Structure of the Grain Market in Surplus Feed Grain Areas. Research Bulletin No. 927. Purdue University, October, 1975.
34. KOHLS, Richard L. Marketing of Agricultural Products. New York: The MacMillan Company, 1967.

35. KULSHRESHTHA, Surendra N. A Current Perspective on the Prairie Grain Handling and Transportation System. Publication 269. Saskatoon: Extension Division, University of Saskatchewan, September, 1975.
36. LEROHL, M.L., G.A. MacEachern, and H. Vandermeulen. The Benefits and Burdens of Feed Grain Transportation Policy. Ottawa: Agricultural Economics Research Council of Canada, 1970.
37. MACMILLAN, K. Bruce. "Domestic Feed Grain Marketing - A Merchant-dizer's View." Canadian Journal of Agricultural Economics, March, 1977.
38. MALCZYK, M., and M. Hawkins. Canadian Feed Grain Policy, 1935-1977. Bulletin 20. Edmonton: Department of Rural Economy, University of Alberta, 1977.
39. MALLEN, Bruce E. "A Preliminary Paper on the Levels, Causes and Effects of Economic Concentration in the Canadian Retail Food Trade: A Study of Supermarket Power." Food Prices Review Board, February, 1976. (Mimeograph)
40. MALMBERG, L. Market Analyst, Alberta Agriculture. Personal Conversation. Edmonton, May, 1978.
41. MENZIES, M.W., et al. The Report of the Canadian Grain Marketing Review Committee. Winnipeg: Canadian Wheat Board, 1971.
42. PEARSON, George G. "Analysis of Quota Policy, Problems, Objectives, and Alternatives in the Western Grain Industry." Unpublished M.Sc. thesis, Department of Agricultural Economics and Rural Sociology, University of Alberta, 1971.
43. RICHTER, Joseph J., Kostek Malczyk, and Elmer Allen. Freight Rate Changes for Prairie Grain: A Perspective. Occasional Paper 1. Edmonton: Department of Rural Economy, University of Alberta, June, 1977

44. RIGAUX, L.R. "Discussion Report - CAES Workshop." Canadian Journal of Agricultural Economics, March, 1977.
45. SASKATCHEWAN DEPARTMENT OF AGRICULTURE. "Saskatchewan's Problems With The Canadian Feed Grain Marketing System - Analysis and Proposals." March, 1978. (Mimeograph)
46. SCHMITZ, Andrew, and Alex F. McCalla. "Canadian and United States Grain Marketing Systems." Division of Agricultural Sciences, University of California, December, 1976.
47. SONNEVELD, Gus. "A Summary of the Papers and Discussion on Feed Grain Policy." Canadian Journal of Agricultural Economics, March, 1977.
48. STATISTICS CANADA. Grain Trade of Canada 1974-75. Ottawa: Statistics Canada, 1976.
49. STOREY, Gary, and Larry Martin. "A Preliminary Paper on the Role and Importance of Futures Markets to Canadian Agriculture." Food Prices Review Board, 1975. (Mimeograph)
50. UNTERSCHULTZ, L., and M.H. Hawkins. "Alberta Hog Industry History and Feed Grain Interface." Meat-Grain Interface Project 1976-77. Vol.2. Saskatoon: University of Saskatchewan, 1977.
51. WALKER, David. "Discussion Reports - CAES Workshop." Canadian Journal of Agricultural Economics, March, 1977.
52. WILLIAMS, Willard F., and Thomas T. Stout. Economics of the Livestock - Meat Industry. New York: The MacMillan Company, 1964.
53. WILSON, A.G. "An Analysis of the Domestic Feed Grains Policy." Canadian Journal of Agricultural Economics, March, 1977.

APPENDIX 1

FARM SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, PRAIRIE PROVINCES

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
ALL WHEAT												
SUPPLY												
Opening Stocks August 1	197.0	240.0	370.0	540.0	392.0	308.0	110.0	75.0	55.0	55.0	234.2	260.0
Production	573.8	629.0	651.9	312.5	510.0	513.0	574.0	465.0	600.0	836.0	566.5	640.0
TOTAL SUPPLIES	770.8	869.0	1,021.9	852.5	902.0	821.0	684.0	540.0	655.0	891.0	802.7	900.0
DISPOSITION												
Marketings	453.9	418.7	410.1	381.6	513.9	631.2	534.6	421.3	525.4	553.9	484.5	
Seed Requirements	36.5	32.5	16.0	25.1	27.7	30.8	28.2	32.2	37.9	32.6	30.1	
Feed for Livestock ¹	38.4	47.8	55.8	53.8	52.4	49.0	46.2	31.5	36.7	44.5	45.6	
Carryover July 31	240.0	370.0	540.0	392.0	308.0	110.0	75.0	55.0	55.0	260.0	240.5	
TOTAL DISPOSITION	770.8	869.0	1,021.9	852.5	902.0	821.0	684.0	540.0	655.0	891.0	800.7	

1. Includes waste and dockage.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 1
FARM SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, PRAIRIE PROVINCES

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
OATS												
SUPPLY												
Opening Stocks August ¹	70.0	47.0	80.0	113.0	75.0	78.0	52.0	45.0	35.0	40.0	63.5	55.0
Production	195.0	249.0	268.0	277.0	288.0	238.0	273.0	198.0	230.0	257.0	247.3	214.0
TOTAL SUPPLIES	265.0	296.0	348.0	390.0	363.0	316.0	325.0	243.0	265.0	297.0	310.8	269.0
DISPOSITION												
Marketings	29.8	39.5	18.9	56.2	29.6	31.0	38.1	38.7	51.5	55.0	38.8	
Seed Requirements	14.3	14.9	13.5	13.3	12.2	13.5	12.7	12.0	11.9	10.7	12.9	
Feed for Livestock ¹	173.9	161.6	202.6	245.5	243.2	219.5	229.2	157.3	161.6	176.3	197.1	
Carryover July 31	47.0	80.0	113.0	75.0	78.0	52.0	45.0	35.0	40.0	55.0	62.0	
TOTAL DISPOSITION	265.0	296.0	348.0	390.0	363.0	316.0	325.0	243.0	265.0	297.0	310.8	

1. Includes waste and dockage.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 1
FARM SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, PRAIRIE PROVINCES

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE
	millions of bushels										
	BARLEY										
<u>SUPPLY</u>											
Opening Stocks August 1	63.0	68.0	132.0	120.0	55.0	76.0	32.0	60.0	45.0	45.0	74.6
Production	234.0	301.0	247.0	332.0	570.0	492.0	440.0	379.0	409.0	455.0	401.3
TOTAL SUPPLIES	297.0	369.0	479.0	502.0	625.0	568.0	526.0	439.0	454.0	500.0	475.9
<u>DISPOSITION</u>											
Marketings	83.5	76.8	164.6	230.6	290.4	233.1	231.7	204.2	215.2	271.0	200.1
Seed Requirements	13.6	14.3	14.7	20.7	18.6	18.3	18.1	17.3	16.5	18.3	17.1
Feed for Livestock ¹	131.9	145.9	179.7	195.7	240.0	234.6	216.2	172.5	177.3	162.7	185.7
Carryover July 31	68.0	132.0	120.0	55.0	76.0	82.0	60.0	45.0	45.0	48.0	73.1
TOTAL DISPOSITION	297.0	369.0	479.0	502.0	625.0	568.0	526.0	439.0	454.0	500.0	475.9

¹. Includes waste and dockage.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 1

FARM SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, PRAIRIE PROVINCES

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
RYE												
<u>SUPPLY</u>												
Opening Stocks August 1	2.2	1.9	5.0	5.3	5.4	5.5	1.6	2.5	3.5	3.5	3.6	2.3
Production	10.5	11.4	13.4	17.0	20.5	11.9	12.9	17.4	18.5	15.0	14.9	13.4
TOTAL SUPPLIES	12.7	13.3	18.4	22.3	25.9	17.4	14.5	19.9	22.0	18.5	18.5	15.7
<u>DISPOSITION</u>												
Marketings	6.9	3.8	7.6	11.6	15.5	9.3	7.4	10.4	12.6	11.9	9.7	
Seed Requirements	.7	.9	.8	1.0	.6	.6	.9	.8	.6	.6	.7	
Feed for Livestock ¹	3.2	3.6	4.7	4.3	4.3	5.9	3.7	5.2	5.3	3.7	4.4	
Carryover July 31	1.9	5.0	5.3	5.4	5.5	1.6	2.5	3.5	3.5	2.3	3.7	
TOTAL DISPOSITION	12.7	13.3	18.4	22.3	25.9	17.4	14.5	19.9	22.0	18.5	18.5	

1. Includes waste and dockage.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 2
SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, CANADA

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
ALL WHEAT												
SUPPLY												
Opening Stocks August 1	571.8	672.5	851.8	1,008.7	734.2	583.7	365.4	370.7	295.3	293.2	574.7	491.1
Production	592.9	650.0	671.2	331.6	529.5	533.3	593.7	488.5	627.5	866.7	588.5	675.8
Imports ¹	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL SUPPLIES	1,164.7	1,322.5	1,523.0	1,340.3	1,263.7	1,117.0	959.1	859.2	922.8	1,159.9	1,163.2	1,167.9
DISPOSITION												
Exports ¹	336.0	305.8	346.5	435.3	503.8	576.6	419.4	394.6	451.4	494.1	426.3	
Human Food	60.5	61.4	64.6	64.4	65.4	65.2	67.5	71.2	70.4	67.0	65.8	
Seed Requirements	39.4	33.4	16.8	26.1	28.6	31.8	29.1	33.3	39.0	33.9	31.1	
Industrial Use	2.4	1.2	.4	.5	.3	.4	.5	.7	1.1	.7	.8	
Loss In Handling	.2	4.7	1.2	.6	.7	.9	1.8	2.8	2.7	n/a	1.7	
Feed for Livestock ²	53.7	64.2	84.8	79.2	81.2	76.7	70.1	61.3	65.0	73.1	70.9	
Carryover July 31	672.5	851.8	1,008.7	734.2	583.7	365.4	370.7	295.3	293.2	491.1	566.7	
TOTAL DISPOSITION	1,164.7	1,322.5	1,523.0	1,340.3	1,263.7	1,117.0	959.1	859.2	922.8	1,159.9	1,163.2	

1. Includes wheat flour.

2. Includes waste and dockage; residual after estimating for other uses.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 2
SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, CANADA

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
OATS												
SUPPLY												
Opening Stocks August 1	114.8	82.0	128.7	148.3	125.4	118.3	79.7	77.4	73.4	79.8	102.8	86.5
Production	301.8	356.7	354.9	353.1	363.5	300.2	326.9	254.8	289.6	313.3	321.5	270.9
Imports ¹	-	-	-	-	-	-	7.3	1.9	-	-	.9	-
TOTAL SUPPLIES	416.6	438.7	483.6	501.4	488.9	418.5	413.9	334.1	363.0	393.1	425.2	357.4
DISPOSITION												
Exports ¹	3.6	2.7	5.2	13.4	10.5	6.9	.8	1.4	13.2	32.0	9.5	
Human Food	5.2	4.6	4.8	4.8	5.0	4.0	4.7	5.6	5.6	5.6	5.0	
Seed Requirements	19.9	19.9	17.9	17.4	16.1	17.4	16.3	15.6	15.4	13.8	17.0	
Industrial Use	-	-	-	-	-	-	-	-	-	-	-	
Loss in Handling	-	.2	.1	-	.1	.1	.1	.1	.2	n/a	.1	
Feed for Livestock ²	305.9	282.6	307.3	340.4	338.9	310.4	314.6	238.0	243.8	255.2	293.7	
Carryover July 31	82.0	128.7	148.3	125.4	118.3	79.7	77.4	73.4	79.8	86.5	99.9	
TOTAL DISPOSITION	416.6	438.7	483.6	501.4	488.9	418.5	413.9	334.1	363.0	393.1	425.2	

1. Includes oatmeal and rolled oats.

2. Includes waste and dockage; residual after estimating for other uses.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 2
SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, CANADA

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE 1977/78
millions of bushels											
BARLEY											
SUPPLY											
Opening Stocks August 1	131.7	130.9	197.4	205.1	144.3	175.9	193.0	208.4	188.5	126.9	170.2
Production	252.9	326.1	371.3	408.3	601.6	518.3	469.6	404.3	437.3	482.9	427.3
Imports	-	-	-	-	-	-	-	-	-	-	-
TOTAL SUPPLIES	384.6	457.0	568.7	613.4	745.9	694.2	662.6	612.7	625.8	609.8	597.5
DISPOSITION											
Exports ¹	41.4	26.4	88.3	179.6	230.6	165.3	127.5	138.4	199.4	174.5	137.1
Human Food	.1	.2	.1	.1	.1	.1	.2	.1	.1	.2	.1
Seed Requirements	14.6	15.3	15.8	22.0	19.7	19.5	19.2	18.5	17.7	19.4	18.2
Industrial Use ²	16.9	17.3	18.4	19.1	20.9	19.3	18.9	22.1	20.0	19.9	19.3
Loss in Handling	.1	.9	.4	.3	.6	.4	.6	.8	2.3	-	.7
Feed for Livestock ³	180.6	199.5	240.6	248.0	298.1	296.6	287.8	244.3	259.4	245.4	250.0
Carryover July 31	130.9	197.4	205.1	144.3	175.9	193.0	208.4	188.5	126.9	150.4	172.1
TOTAL DISPOSITION	384.6	457.0	568.7	613.4	745.9	694.2	662.6	612.7	625.8	609.8	597.5

1. Includes malt and pot and pearl barley.

2. Malting, distilling and brewing.

3. Includes waste and dockage; residual after estimating for other uses.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 2
SUPPLY AND DISPOSITION OF PRINCIPAL CROPS, CANADA

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	10 YEAR AVERAGE	1977/78
millions of bushels												
RYE												
<u>SUPPLY</u>												
Opening Stocks August 1	8.3	7.5	8.7	11.3	12.9	15.8	10.3	10.5	13.4	12.3	11.1	13.4
Production	12.0	13.0	15.1	18.9	21.9	13.5	14.3	18.9	20.6	17.3	16.6	15.1
Imports ¹	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL SUPPLIES	20.3	20.5	23.8	30.2	34.8	29.3	24.6	29.4	34.0	29.6	27.7	28.5
<u>DISPOSITION</u>												
Exports	4.8	4.3	3.8	8.9	10.7	8.2	4.6	4.8	11.8	6.6	6.9	
Human Food	.4	.4	.5	.5	.5	.5	.5	.5	.5	.6	.5	
Seed Requirements	.8	1.0	1.0	1.1	.7	.7	.9	.9	.7	.7	.8	
Industrial Use ²	2.6	2.2	2.8	3.0	4.0	3.5	3.3	3.2	2.7	2.7	3.0	
Loss In Handling	-	-	-	.1	.1	.1	.1	.4	.1	n/a	.1	
Feed for Livestock ³	4.2	3.9	4.4	3.7	3.0	6.0	4.7	6.2	5.9	5.6	4.8	
Carryover July 31	7.5	8.7	11.3	12.9	15.8	10.3	10.5	13.4	12.3	13.4	11.6	
TOTAL DISPOSITION	20.3	20.5	23.8	30.2	34.8	29.3	24.6	29.4	34.0	29.6	27.7	

1. Includes rye flour.

2. Distilling.

3. Includes waste and dockage; residual after estimating for other causes.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 3
FREIGHT ASSISTED SHIPMENTS OF PRINCIPAL FEEDS BY PROVINCE OF DESTINATION, CANADA

PROVINCE	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	10 YEAR AVERAGE	1975/77 ¹
	thousands of tons											
	WHEAT											
Newfoundland	8.2	4.7	5.7	17.5	18.7	21.6	21.6	17.9	19.3	11.7	14.7	20.6
Prince Edward Island	6.3	4.5	3.6	6.4	12.6	7.9	7.2	5.5	5.7	3.0	6.3	3.8
Nova Scotia	52.7	35.9	24.7	69.7	82.1	66.4	87.4	60.3	47.7	19.0	54.6	33.4
New Brunswick	14.7	8.3	11.5	33.0	38.3	30.5	41.4	27.8	17.9	8.5	23.2	13.7
Quebec	249.6	162.5	156.1	297.1	460.7	393.2	495.0	344.2	374.1	272.6	320.5	254.6
Ontario	101.8	59.5	59.2	250.0	224.0	306.9	172.2	130.5	143.0	65.1	131.2	13.6
British Columbia	74.8	69.5	80.1	109.5	128.4	129.5	142.2	123.1	100.0	76.0	103.3	68.5
TOTAL	508.1	345.3	340.9	783.2	964.8	756.0	966.7	709.3	707.7	455.9	653.8	408.2

1. Effective August 1, 1976, freight assistance removed for most of Ontario and a portion of Quebec.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 3
FREIGHT ASSISTED SHIPMENTS OF PRINCIPAL FEEDS BY PROVINCE OF DESTINATION, CANADA

PROVINCE	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	10 YEAR AVERAGE	1976/77 ¹
	thousands of tons											
	OATS											
Newfoundland	4.2	3.0	3.4	4.0	5.0	9.3	4.7	6.2	3.8	2.7	4.6	4.8
Prince Edward Island	2.6	4.0	1.6	2.2	6.0	8.8	6.5	7.3	3.7	3.0	4.6	2.7
Nova Scotia	21.3	19.7	14.6	20.5	27.4	32.2	26.9	25.6	20.1	13.7	22.2	13.4
New Brunswick	13.3	16.0	12.5	14.6	16.8	19.8	20.1	19.9	14.7	11.4	15.9	13.0
Quebec	328.7	312.7	250.7	241.7	233.4	289.1	335.8	252.7	248.5	230.5	272.4	215.9
Ontario	255.8	203.3	122.1	160.1	127.9	126.6	170.7	168.6	132.6	100.1	157.8	20.7
British Columbia	42.3	43.1	47.4	46.3	56.1	57.9	55.1	51.2	42.6	31.7	47.4	29.8
TOTAL	678.2	601.8	452.3	489.4	472.6	543.7	619.8	531.5	466.0	393.1	524.9	300.3

1. Effective August 1, 1976, freight assistance removed for most of Ontario and a portion of Quebec.

Source: Canada Grains Council. Statistical Handbook 77.

APPENDIX 3

FREIGHT ASSISTED SHIPMENTS OF PRINCIPAL FEEDS BY PROVINCE OF DESTINATION, CANADA

PROVINCE	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	10 YEAR AVERAGE	1976/77 ¹
	thousands of tons											
	BARLEY											
Newfoundland	5.3	7.1	8.3	10.5	12.8	9.2	9.4	9.5	11.2	9.0	9.3	14.0
Prince Edward Island	10.1	18.0	11.4	12.7	20.4	22.4	19.6	22.3	11.2	11.1	15.9	3.9
Nova Scotia	33.0	37.9	39.1	51.3	46.2	53.1	46.9	46.5	47.1	45.4	44.6	42.0
New Brunswick	16.8	23.2	26.3	36.6	32.2	33.6	32.0	34.6	33.7	32.0	30.1	32.7
Quebec	410.6	422.1	437.9	512.6	512.7	509.8	559.4	617.4	587.9	535.8	510.6	523.7
Ontario	293.7	249.2	223.0	393.3	192.9	126.0	168.8	179.0	164.8	88.3	207.9	21.3
British Columbia	92.9	113.2	134.7	136.0	142.8	129.6	134.1	143.3	122.9	125.8	127.5	132.5
TOTAL	862.4	870.7	880.7	1,153.0	960.0	883.7	970.2	1,052.6	978.8	847.4	945.9	770.1

1. Effective August 1, 1976, freight assistance removed for most of Ontario and a portion of Quebec.

APPENDIX 3
FREIGHT ASSISTED SHIPMENTS OF PRINCIPAL FEEDS BY PROVINCE OF DESTINATION, CANADA

PROVINCE	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	10 YEAR AVERAGE	1976/77 ¹
	thousands of tons											
	RYE											
Newfoundland	-	1.0	1.0	.1	-	-	-	-	-	-	.2	-
Prince Edward Island	-	.4	.5	.1	-	-	-	-	-	-	.1	-
Nova Scotia	-	2.5	2.1	.4	-	.6	-	-	-	-	.6	-
New Brunswick	-	2.0	1.6	-	-	-	-	-	-	-	.4	-
Quebec	14.8	16.3	7.7	.1	1.5	.8	.8	.5	-	.8	4.2	.1
Ontario	15.7	10.1	5.3	1.2	.9	1.0	2.1	.2	.5	.4	3.7	.6
British Columbia	.2	1.4	.7	.4	-	-	-	-	-	-	.3	-
TOTAL	30.7	33.7	18.9	2.3	2.4	2.4	2.9	.7	.5	.4	9.5	.7

1. Effective August 1, 1976, freight assistance removed for most of Ontario and a portion of Quebec.

Source: Canada Grains Council. Statistical Handbook 77.

DATE DUE

C.2

THESIS 1978 c.2

AUTHOR Lyster, Les 1978-8

TITLE CWB Impact on the Western
Feed Grain Market

DATE

ISSUED TO

